

# HELMINTHOLOGICAL ABSTRACTS

*incorporating*

**BIBLIOGRAPHY OF HELMINTHOLOGY**

COMPILED FROM WORLD LITERATURE OF 1953



*Prepared by the*

COMMONWEALTH BUREAU OF AGRICULTURAL PARASITOLOGY  
(HELMINTHOLOGY)

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### HELMINTHOLOGICAL ABSTRACTS *incorporating* BIBLIOGRAPHY OF HELMINTHOLOGY

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# HELMINTHOLOGICAL ABSTRACTS

Vol. 22, Part 2

1953

## PRINCIPAL CONTENTS

### GENERAL SUBJECTS

Anthelmintics, 72a, 72b, 75a, 84b, 85a, 86b, 90e, 92b, 98b, 101c, 104c, 104e, 106a, 107d, 111a, 116a, 119a, 127l, 151e, 152c, 152f, 161g.  
Bionomics, 76f, 84a, 107b, 122g, 132a, 158b.  
Control, 95a, 100b, 101b, 122i, 122j, 122m, 129f, 129g, 129i, 148p, 151a, 155a, 161d, 162.  
Immunity, 70a, 70b, 70c, 70d, 82a, 84a, 108a, 108d, 117e, 122a, 122e, 122h, 161c.  
Immunology, 108b.  
Life-Histories, 83a, 83c, 92a, 107d, 107f, 110g, 140a, 141a, 141b, 147a, 148d, 156b.  
Molluscicides, 72f, 72g.  
Morphology, 74c, 80a, 83b, 110 o, 117c, 128a, 147b, 148h, 159a.  
Nematocides (plant eelworm), 68b, 102a, 107e, 122c, 144a.  
Pathology, 148a, 148b, 151b.  
Physiology & Metabolism, 99c, 107h, 110m, 110n, 110r, 122l, 156a.  
Technique, 72d, 88b, 99a, 99d, 113a, 122b, 122c.  
Treatment, 65a, 85b, 114a, 116a.

### HOST DISTRIBUTION

#### Animals of Economic Importance

Domestic animals, 85a, 149b, 161a, 161d, 161f.  
Horse, 107d, 111a.  
Ruminants, 101c, 116a, 126c, 128d, 128i.  
Cattle, 83a, 83b, 83c, 84a, 117a, 126d, 128f, 133a, 148m, 152a.  
Buffalo, 128b.  
Sheep, 82a, 83a, 84b, 92b, 104c, 106a, 107b, 126d, 126j, 128h, 128j, 128k, 161c.  
Goat, 128j, 128k.  
Pig, 104b, 129i, 143a, 145a.  
Dog, 74a, 84c, 96a, 104e, 114a, 140a, 151a, 151e, 152b, 152d, 152f.  
Cat, 151e.  
Rabbit, 108b, 110d, 117e, 118a, 141a, 156b.  
Rat, 70a, 70b, 70c, 70d, 78b.  
Mouse, 76c, 99a, 108a, 108c, 108d, 126k, 148 o.  
Man, 65a, 69a, 71a, 72a, 72b, 72c, 72e, 73a, 75a, 75b, 76b, 78b, 86a, 86b, 88a, 88b, 88c, 88d, 89a, 90a, 90c, 90d, 90e, 90f, 90g, 90h, 90i, 90k, 90l, 93a, 97a, 98a, 98b, 105a, 109a, 115a, 119a, 127l, 136b, 139a, 142a, 142b, 142c, 148a, 148b, 148c, 148k, 148n, 148q.

#### Other Vertebrate Hosts

Mammals, 66a, 76d, 110a, 110c, 110h, 110i, 126a, 126f, 127h.  
Birds, 99a, 104d, 112a, 127k, 128m, 147e, 158a.  
Reptiles, 147b.  
Amphibians, 110k.  
Fishes, 110f, 126g, 126h, 126i, 127a, 127b, 127c, 127d, 127e, 127f, 127g, 127i, 127j, 127m.

#### Invertebrates, 117f.

Plants, 68a, 95a, 100a, 100b, 100c, 101b, 102b, 107a, 121a, 122a, 122b, 122d, 122e, 122f, 122g, 122h, 122i, 122j, 122k, 122m, 122 o, 126b, 126e, 134a, 144a, 146a, 149a, 155a.

Free-living Eelworms, 80a, 130a, 132a.



## SYSTEMATICS, NEW SPECIES etc.

Trematoda, 76d, 78a, 104d, 110f, 110h, 110k, 110q, 110s, 126h, 127a, 127b, 127c,  
127d, 127e, 127f, 127g.  
Cestoda, 110b, 126i, 127i, 127j.  
Nematoda, 66a, 74b, 107g, 110l, 126a, 126b, 128j, 147e, 158a.  
Acanthocephala, 110p, 127m.  
Nomenclature, 74b, 110j, 159a.

## GEOGRAPHICAL DISTRIBUTION

### EUROPE

Britain, 88b, 107f.  
Finland, 73a.  
France, 133a.  
Germany, 85c.  
Holland, 146a.  
Hungary, 66a.  
Italy, 90f, 139a.  
Spain, 136b.

### AUSTRALASIA

Australia, 68a, 83c, 84a, 84c.

### NORTH AMERICA

Canada, 93a.  
U.S.A., 100a, 105a, 109a, 122f,  
126d, 143a.

### AFRICA

Belgian Congo, 75b.  
East Africa, 98b.  
French Equatorial Africa, 90c, 90l.  
French West Africa, 90d, 90g.  
Liberia, 148q.  
Sierra Leone, 152a.  
South Africa, 101b, 142b.  
Spanish Morocco, 130a.  
Sudan, 89a.

### CENTRAL AMERICA, 100c.

Costa Rica, 72c.  
Nicaragua, 115a.

### ASIA

Ceylon, 71a, 126b.  
India, 100b, 104b, 127a.  
Lebanon, 90a.  
Malayan Archipelago, 69a.  
Pakistan, 128b, 128f, 128h, 128i,  
128j, 128k, 161a.  
Persia, 90k.  
Thailand, 76b.

### WEST INDIES

St. Kitts, 149b, 152b.

### SOUTH AMERICA

Brazil, 72e.  
Dutch Guiana, 145a.

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# HELMINTHOLOGICAL ABSTRACTS

INCORPORATING BIBLIOGRAPHY OF HELMINTHOLOGY

FOR THE YEAR 1953

Vol. 22, Part 2

## 65—Acta Medica Scandinavica.

- a. BONSDORFF, B. VON & GORDIN, R., 1953.—“Treatment of pernicious anemia with intramuscular injections of tapeworm extracts. *Diphyllobothrium latum* and pernicious anemia XIV.” 144 (4), 263–267.

(65a) The intramuscular injection of aqueous extracts of dried, pulverized *Diphyllobothrium latum* produced maximal reticulocytosis and rapid haematological remission in five cases of typical pernicious anaemia, four of which were infected with this tapeworm. The authors had previously shown that the dried tapeworm was effective when given by the mouth. The results indicate that the living tapeworm contains large quantities of vitamin B<sub>12</sub> of which the host has presumably been deprived. R.T.L.

## 66—Acta Veterinaria. Budapest.

- a. KOBULEI, T. & VERSHENI, L., 1953.—[Beiträge zur Helminthenfauna der Soriciden Ungarns.] 3 (2), 189–205. [In Russian: German summary pp. 204–205.]

(66a) Of the seven helminth species collected from 70 Hungarian insectivores, one is new, viz., *Physaloptera kotlani* n.sp. from the gut wall of *Crocidura leucodon* and *Sorex minutus*. The other species are: *Longistriata depressa*, *Capillaria* sp., *Porrocaecum* sp., *Anomotaenia subterranea*, *Dicranotaenia fülleborni* and *D. diaphana*. That *D. diaphana* is correctly placed in *Dicranotaenia* is questionable. R.T.L.

## 67—Advisory Leaflet. Ministry of Agriculture and Fisheries. London.

- a. ANON., 1953.—“Root knot eelworm in glasshouses.” No. 307, 4 pp. [Revision of 1948 Leaflet.]

## 68—Agricultural Gazette of New South Wales.

- a. ANON., 1953.—“The beet eelworm.” 64 (5), 245–246.  
b. ANON., 1953.—“Some chemicals used in plant disease control in N.S.W.” 64 (6), 305–307.

(68a) An outbreak of *Heterodera schachtii* is reported in a crop of beet-root at Milperra, one of the principal market gardening areas in the Sydney metropolitan district. This eelworm has only once previously been recorded for New South Wales. R.T.L.

(68b) In this article, which summarizes the present position regarding the use of fungicides and nematocides in New South Wales, it is stated that (i) D-D mixture is now widely used for nematode control at rates approximating 20 gallons per acre, (ii) chloropicrin plus ethylene dibromide is of particular value for green-house soils as it is both a fungicide and a nematocide, and (iii) E.605 (diethylnitrophenylthiophosphate) is used against foliar nematodes. R.T.L.



**69—American Journal of Digestive Diseases.**

- a. BONNE, C., BRAS, G. & LIE KIAN JOE, 1953.—“Five echinostomes found in man in the Malayan Archipelago.” 20 (1), 12-16.

(69a) Five species of echinostomes are recognized in man in the Malayan Archipelago, viz., *Euparyphium ilocanum*, *E. malayanum*, *Echinoparyphium recurvatum*, *Echinostoma revolutum* and *E. lindoensis*. Brief descriptions with spine formulae are given, together with information regarding reservoir hosts, life-cycle and development under experimental conditions. The authors agree with Beaver that specific determination depends on the arrangements and characters of the circumoral spines. They do not consider that the generic names *Euparyphium* and *Echinoparyphium* are fully justified although these names are used in this account. Morphologically *Echinostoma lindoensis* and *E. revolutum* show similarities but they are entirely different in biological behaviour. *E. lindoensis* shows special adaptation to man but the other four species are accidental parasites in man, with rats and birds as reservoir hosts.

P.M.L.

**70—American Journal of Hygiene.**

- a. ZAIMAN, H., 1953.—“Studies on the nature of immunity to *Trichinella spiralis* in parabiotic rats. I. A preliminary study of the immune response of the ‘uninfected’ rat as determined by observation of the intestinal phase.” 57 (3), 297-305.
- b. ZAIMAN, H., OMI, G. & GAPINSKI, L., 1953.—“Studies on the nature of immunity to *Trichinella spiralis* in parabiotic rats. II. A preliminary study of the immune response of the ‘uninfected’ rat as determined by observations of muscular invasion.” 57 (3), 306-310.
- c. ZAIMAN, H. & RUBEL, J., 1953.—“Studies on the nature of immunity to *Trichinella spiralis* in parabiotic rats. III. The immune response in parabiotic rats surgically separated from their mates five days after one member of the experimental pairs received an immunizing dose of *Trichinella spiralis*.” 57 (3), 311-315.
- d. THORSON, R. E., 1953.—“Studies on the mechanism of immunity in the rat to the nematode *Nippostrongylus muris*.” 58 (1), 1-15.

(70a) Zaiman has examined the immune response to *Trichinella* of rats joined in parabiotic union. These siamese twins have a common circulation. When a single dose of *Trichinella* larvae was administered to one member of the pair, that member usually became resistant to infection a month later. The resistance of the uninfected twin was considerably greater than that of control rats but less than that of its infected mate; the degree of resistance was judged from the number of adults recovered from the intestine of the experimental and control rats five days after they had received challenge doses of *Trichinella* larvae.

R.T.L.

(70b) Continuing the previous studies on the immune response to *Trichinella* infection of surgically produced siamese twin rats, in which the number of adult worms found in the intestine was taken as the criterion of resistance [see preceding abstract], further experiments were made after which the criterion of resistance was based on the degree of muscular invasion which followed the challenge dose of *Trichinella* larvae. The new experiments confirm the conclusion that the resistance of the uninfected twin was considerably greater than that of the control rats.

R.T.L.

(70c) When the siamese twin rats [see Nos. 70a & 70b above] were surgically separated five days after one had been infected with *Trichinella* larvae, the other “uninfected” member was more resistant to a challenge dose of larvae than were the controls.

R.T.L.

(70d) Thorson describes a series of controlled experiments on the antigenic activity of tissue extracts and of secretions and excretions of infective larvae of *Nippostrongylus muris*. Extraction of the bodies of larvae yielded six fractions of which one was lipoidal and was discarded because of difficulty in handling, four were mixtures of different proportions of protein and polysaccharide and the sixth was mainly polysaccharide. All five produced precipitates in dilutions of up to 1 in 256 and the sixth did so at a dilution of 1 in 1,024 parts. The antibodies produced could not, however, be related to the precipitates formed at the openings of infective larvae when placed in immune serum. When the secretion and excretion



preparations were used as antigens they produced antibodies which reacted with larvae in *in vitro* tests and formed precipitates. Injection of secretion and excretion preparations into rats produced a partial immunity, but this was not as great as that induced by repeated reinfection with living larvae. A marked lipolytic activity was demonstrated in the secretion and excretion preparations but this was inhibited by immune serum. S.V.

### 71—American Journal of Surgery.

- a. PAUL, M. & GOONAWARDENA, D. F. DE S., 1953.—“Acute Meckel's diverticulitis with round worms in the peritoneal cavity.” 85 (2), 243-244.

(71a) Paul & Goonawardena report two more cases of acute Meckel's diverticulitis with peritonitis and roundworms in the peritoneal cavity. Since 1927 only three such cases have been recorded in the literature. The cases from Ceylon involve two Sinhalese boys, a four-year-old and a three-year-old, both of whom were operated on successfully. In the case of the three-year-old boy, 10 living roundworms were removed surgically, and the gangrene at the tip of Meckel's diverticulum was probably caused by over-distension with roundworms in such a way that the blood supply to the diverticulum was cut off. The roundworms in the peritoneal cavity must have reached that site through the gangrenous tip of Meckel's diverticulum, but in doing so they had left no patent orifice and caused no leakage of intestinal fluids. H.C.

### 72—American Journal of Tropical Medicine and Hygiene.

- a. OTTO, G. F., JACHOWSKI, Jr., L. A. & WHARTON, J. D., 1953.—“Filariasis in American Samoa. III. Studies on chemotherapy against the nonperiodic form of *Wuchereria bancrofti*.” 2 (3), 495-516.  
 b. WEINSTEIN, P. P., DUMAN, L. J., TRELAUNY, G. S. & PATTERSON, J. C., 1953.—“Paragonimiasis: failure of Nilodin in therapy and report of one case with urinary tract involvement.” 2 (3), 517-523.  
 c. SCRIMSHAW, N. S., MORALES, J. O., SALAZAR B., A. & LOOMIS, C. P., 1953.—“Health aspects of the Community Development Project, rural area, Turrialba, Costa Rica, 1948-51.” 2 (4), 583-592.  
 d. SAPERO, J. J. & LAWLESS, D. K., 1953.—“The ‘MIF’ stain-preservation technic for the identification of intestinal protozoa.” 2 (4), 613-619.  
 e. SIOLI, H., 1953.—“Schistosomiasis and limnology in the Amazon region.” 2 (4), 700-707.  
 f. NEWTON, W. L. & HASKINS, W. T., 1953.—“A comparison of the dosage-mortality responses of some strains of *Australorbis glabratus* to sodium pentachlorophenate.” 2 (4), 708-715.  
 g. NOLAN, M. O., BOND, H. W. & MANN, E. R., 1953.—“Results of laboratory screening tests of chemical compounds for molluscicidal activity. I. Phenols and related compounds.” 2 (4), 716-752.

(72a) Diethylcarbamazine (hetrazan) proved rapidly microfilaricidal when administered orally to cases infected with the non-periodic form of *Wuchereria bancrofti* in American Samoa; no evidence was obtained, however, that it killed the adult worm. Sodium thiacetarsamide (caparsolate sodium), which must be given intravenously, had a very slow microfilaricidal action but the results were more permanent and there was some laboratory evidence that the adult worms were killed. As 15 daily doses are necessary it has a limited value as a public health measure for whole communities. The gastro-intestinal disturbances it produces can be prevented or relieved by 50 mg. of ascorbic acid thrice daily. R.T.L.

(72b) Seven Korean patients with paragonimiasis received, over a period of six days, a total dosage of 75 mg. per kg. body-weight of Nilodin without effect. A case is reported in which Paragonimus eggs averaging 5,966 daily were passed in the urine as well as in the sputum. The eggs disappeared from the urine and sputum after treatment with a combination of emetine, sulphadiazine and Nilodin for eight weeks. The result is attributed to the combined action of the emetine and the sulphadiazine. R.T.L.



(72c) At Turrialba, a rural area of Costa Rica, the major health problems include dietary deficiency of vitamin A, riboflavin, calcium and animal protein. In the 140 families studied the occurrence of multiple parasitism was very high. In landless labourers the species incidences were: *Ascaris* 58.5%, whipworm 96.3%, *Necator americanus* 64.2%, *Strongyloides stercoralis* 8.4%, *Hymenolepis nana* 4% and *Taenia saginata* 0.3%. Somewhat similar percentages for labourers occupying land, small farmers and skilled workers are tabulated. In children under ten years of age the incidence of *H. nana* was 7.5%. Annual treatments by the Ministry of Health are presumed to have prevented extremely heavy infections. R.T.

(72d) The MIF (merthiolate-iodine-formaldehyde) stain preservation technique was described by Saper, Lawless & Strome in 1951. It has now been further tested for direct smear identification of protozoa and helminth eggs in faecal specimens and as a fixing and staining preservative solution for specimens collected in the field, hospital wards or in the home. It has the advantages of simplicity, low cost, and rapid wet-fixed staining and preservation. Laboratory diagnosis may be delayed for over six months without appreciable deterioration. The specimens can be collected by untrained persons and forwarded to a central laboratory. The more common helminth eggs may be subjected to the flotation concentration technique by replacing the supernatant fluid with saturated brine solution. R.T.

(72e) Fordlandia in the State of Pará is the only known place in the Amazonian region where schistosomiasis *mansoni* is endemic. The limnological conditions there are favourable to the development of the planorbid vectors as the carboniferous formations render the surface waters almost neutral. Surveys of many Amazonian areas show that where the waters are acidic the snails are absent. With colonization from north-east Brazil and other infected regions the disease may become endemic in the carboniferous strata north and south of the Amazon. Sioli considers that there is little danger of this elsewhere in the Amazon basin. R.T.

(72f) Three strains of *Australorbis glabratus* differed in average susceptibility to the lethal action of sodium pentachlorophenate. The strains used were Venezuelan, Puerto Rican, Brazilian and a Brazilian albino mutant and had been maintained in the laboratory for three years. Although the differences in susceptibility were significant they were not marked, but they suggest that differences in susceptibility to NaPCP have, at least in part, a genetical basis. Age, size and general physiological state of the snails will also determine if they will succumb to a particular set of exposure conditions. R.T.

(72g) Of the 701 phenolic type compounds tested for activity against *Australorbis glabratus*, the most active were among the highly halogenated phenols, the dinitroalkylphenols and arylphenols, the "bisphenol" type of compound and the mercurated phenols. On the basis of cost and availability, pentachlorophenol or its salts would appear to be the molluscicide of choice at the present time. R.T.

### 73—Annales Medicinae Experimentalis et Biologiae Fenniae.

- a. TÄHTI, E., 1953.—"The fish tapeworm. Occurrence in children in the Finnish lake area." 31 (1), 46-47.

(73a) Tähti found that 194 out of 1,226 children (7 to 15 years of age) in central Finland were infected with *Diphyllbothrium latum*. S.W.

### 74—Annales de Parasitologie Humaine et Comparée.

- a. GALLIARD, H. & BERDONNEAU, R., 1953.—"Strongyloidose expérimentale chez le chien. Effets de la cortisone. Résultats du test de Thörn à hormone corticotrope (A.C.T.H.)." 28 (3), 163-171.
- b. CHABAUD, A. G. & CHOQUET, M. T., 1953.—"Nouvel essai de classification des filaires (superfamille des Filarioidea)." 28 (3), 172-192.



- c. GALLIARD, H. & CHABAUD, A. G., 1953.—“ Sur la morphologie de *Wuchereria bancrofti* (Cobbold) provenant du Tonkin et de Tahiti.” 28 (3), 237-239.

(74a) Galliard & Berdonneau infected four young dogs (aged about three months) with 10,000-20,000 infective larvae of *Strongyloides stercoralis*. Two of the dogs were given 25 mg. of cortisone, one on the 53rd day after infection and the other daily from the 27th to the 32nd day; in both these dogs the infection lasted far longer than in the other two dogs which did not receive any cortisone. A fifth dog, which had been refractory to reinfection with *Strongyloides* for two years, was given 25 mg. of cortisone daily for eight days before exposure and for four days after: it became infected. In each case, the Thorn test was negative during infection with *Strongyloides* but became positive immediately after the infection was lost. S.W.

(74b) In this new attempt to classify the filarial worms, the families and subfamilies proposed by Wehr are used as they appear to correspond to the evolution of the spirurids which have adopted a tissue habitat. Exception is made in the case of the Dipetalonematidae which is subdivided, on the length of the tail, into six subfamilies, viz., Dipetalonematinae, Cardionematinae, Oswaldofilariinae n.subf., Dirofilariinae, Splendidofilariinae n.subf. and Onchocercinae. 89 genera are considered to be valid and 30 are treated as synonyms. *Derañophoronema* Romanovitch, 1916 is restored, with *Filaria evansi* (Lewis, 1882) as type. The species formerly distributed among the genera *Splendidofilaria*, *Chandlerella*, *Parachandlerella*, *Vagrifilaria* and *Paramicipsella* are divided between *Splendidofilaria* and *Paramicipsella*. Under the former, of which *S. pawlowskyi* is type, are placed those species with a long tail, viz., *S. bosei* (Chandler, 1924) n.comb., *S. gedoelsti* Travassos, 1925, *S. sinensis* (Li, 1933) n.comb., *S. columbigallinae* (Augustine, 1937) n.comb. and *S. periarterialis* (Caballero, 1948) n.comb. Under *Paramicipsella*, of which *P. brevicaudata* Chow, 1939 is type, are placed *P. gedoelsti* (Travassos, 1925) n.comb., *P. stantchinsky* (Gilbert, 1932) n.comb., *P. lepidogrammi* (Tubangui & Masilungan, 1937) n.comb., *P. travassosi* (Koroliowa, 1926) n.comb., *P. lienalis* (Orloff, 1947) n.comb., *P. australis* (Johnston & Mawson, 1942) n.comb. and *P. brevispiculum* (Singh, 1949) n.comb. The genera *Chandlerella* pro parte, *Vagrifilaria* pro parte and *Parachandlerella* thus fall into the synonymy of *Splendidofilaria*, and *Chandlerella* pro parte and *Vagrifilaria* pro parte into that of *Paramicipsella*.

R.T.L.

(74c) The measurements and anatomical details of a number of adult *Wuchereria bancrofti* received from Indo-China and Tahiti at the Institute of Parasitology of the Faculty of Medicine of Paris, correspond exactly with Fain's description based on material collected in the Belgian Congo. The female has the cuticular bosses recently observed by Buckley. Although the differences which Buckley has noticed in the Pacific worms with non-periodic embryos are probably constantly present in small specimens, the large examples from the Pacific which Galliard & Chabaud have examined are indistinguishable from the worms which gave rise to embryos exhibiting periodicity.

R.T.L.

## 75—Annales de la Société Belge de Médecine Tropicale.

- a. BELHOMMET, F., 1953.—“ Essai de thérapeutique de la bilharziose par la carbilazine.” 33 (1), 3-11. [Flemish summary p. 11.]
- b. SCHWETZ, J., 1953.—“ Recherches malaco-schistosomiques dans l'agglomération de Jadotville et ses environs immédiats.” 33 (1), 67-85. [Flemish summary pp. 83-84. Discussion p. 84.]

(75a) Carbilazine [hetrazan] in tablets of 50 mg. was tested in 24 cases of intestinal schistosomiasis in dosages varying from one course of 80 tablets to three courses totalling 256 tablets. After treatment nearly all patients were shown to be negative by repeated faeces examinations, most of the exceptions being the first few treated. Ten of these were re-examined at intervals over a period of up to 18 months after treatment and six remained negative. There was rapid improvement in the physical condition, even in heavily infected primitive negroes who made no effort to avoid reinfection. The drug was very well tolerated but in about a third of the cases there was pruritus, sometimes with urticaria, attributed to the destruction of the



parasites. Although more expensive than tartar emetic, Belhommet considers that this is compensated for by the absence of toxic effects and by the fact that the patient is not required to rest during treatment (although for test purposes these patients were kept in hospital). In a later group of five cases, three appeared to be negative after treatment. P.M.B.

(75b) In and around the small industrial and mining town of Jadotville (Katanga province, Belgian Congo) vesical and intestinal schistosomiasis are equally prevalent and, in spite of a well organized health service, affect 49.5% of the population of the negro centre of the town ("le centre extra-coutumier"), where living conditions, water and food supplies are good and 98.5% of the negro population of the village of Buluo where conditions are much more primitive. The highest incidence is in children aged 10 to 15 years. Double infections are very frequent. From 12th July to 18th August, 1952 molluscan infection ranged from 0% to 30.6%, according to locality, in *Planorbis pfeifferi* (average 6.83% of 6,462 specimens) and from 0% to 2.6% in *Physopsis africana* (average 0.18% of 5,270 specimens). Mice infected with cercariae from *P. africana* developed unisexual infections with *Schistosoma mansoni* but those infected from *Planorbis pfeifferi* all died between the 45th and 52nd days after infection—this is attributed either to the excessive output of cercariae by the planorbid or to a particularly virulent local strain of *S. mansoni* at Jadotville. There was no evidence of *S. rodhaini* either in the infected mice or in the faeces, liver and mesentery of 99 rodents belonging to several genera which were trapped in the locality. P.M.B.

## 76—Annals of Tropical Medicine and Parasitology.

- a. CHARLES, L. J., 1953.—"A field experiment in residual control of the adults of *Culex fatigans* in British Guiana." 47 (2), 113-125.
- b. VIRANUVATTI, V., STITNIMANKARN, T. & TANSURAT, P., 1953.—"A fatal case of infection with *Fasciolopsis buski* in Thailand." 47 (2), 132-133.
- c. STANDEN, O. D., 1953.—"The relationship of sex in *Schistosoma mansoni* to migration within the hepatic portal system of experimentally infected mice." 47 (2), 139-145.
- d. SCHWETZ, J., 1953.—"On a new schistosome of wild rodents found in the Belgian Congo, *Schistosoma mansoni* var. *rodentorum* var. nov." 47 (2), 183-186.
- e. NICHOLAS, W. L., 1953.—"The bionomics of *Culicoides austeni*, vector of *Acanthocheilonema perstans* in the rain-forest of the British Cameroons, together with notes on *C. grahamii* and other species which may be vectors in the same area." 47 (2), 187-206.
- f. KERSHAW, W. E., LAVOPIERRE, M. M. J. & CHALMERS, T. A., 1953.—"Studies on the intake of microfilariae by their insect vectors, their survival, and their effect on the survival of their vectors. I.—*Dirofilaria immitis* and *Aedes aegypti*." 47 (2), 207-224.

(76a) With the successful control of *Anopheles darlingi* and *Aedes aegypti* in British Guiana by residual D.D.T. applications, *Culex fatigans* remains the only important house-frequenting mosquito vector of *Wuchereria bancrofti* there. In a suburban area of Georgetown two formulations of D.D.T., gammexane and chlordane were used against *C. fatigans* three years after previous residual D.D.T. applications. In a ten-weeks' experiment all these preparations caused a reduction in adult mosquito density. Chlordane, as 2% in D.D.T.-kerosene solution and 3% in kerosene, was the most effective. It is concluded, however, that for complete control of *C. fatigans* larvicidal measures will have to be combined with residual insecticides. R.T.L.

(76b) The occurrence in Thailand of *Fasciolopsis buski* has hitherto been reported only from the Bang Kun Sri district of Thonburi Province. Clinical details are now given of a severe infection, which terminated fatally, in a patient from Ayuthia Province; 466 *F. buski* were present in the lumen and attached to the wall of the bowel. R.T.L.

(76c) That all the *Schistosoma mansoni* cercariae produced by an *Australorbis glabratus* infected by a single miracidium are of the same sex is experimentally confirmed by Standen. Bisexual infections develop in mice when an established infection of one sex is reinfected with cercariae of the opposite sex, but no immunity to reinfection was observed in white mice. In an all-male infection a proportion of the worms migrate to the mesenteric veins by the



10th week, but no migration occurs in all-female infections. Standen finds that in all-female infections the worms remain immature but when males are introduced the females rapidly reach maturity if in contact with the males; provided the males are sufficiently developed to supply the necessary energy for the journey, the time of migration of paired worms from the liver to the mesenteric veins is controlled by the attainment of maturity by the female worms.

R.T.L.

(76d) At Albertville, Schwetz has discovered that in addition to *Schistosoma rodhaini* a second schistosome occasionally occurs in wild rodents. This schistosome has a lateral-spined egg which can be distinguished from that of *S. mansoni* by the following characters: the shell is elongated and sometimes slightly twisted with one end rounded and the other narrowed, the spine is inserted near the rounded end and the notch between the base of the spine and the shell body is often wide and deep. The adult worms are morphologically indistinguishable from *S. mansoni*. The new schistosome is named *Schistosoma mansoni* var. *rodentorum* n.var. Schwetz admits that it has yet to be proved that this is a true morphological and biological variety of *S. mansoni* adapted to its rodent hosts.

R.T.L.

(76f) When *Aedes aegypti* are fed on a dog with large numbers of *Dirofilaria immitis* embryos in the blood, the number of microfilariae taken in has no relation to the time spent on feeding. Infected mosquitoes have a very low survival rate during the first five days when the microfilariae are migrating into the Malpighian tubules, a high survival rate from the 5th to 20th day when the larvae are undergoing development in the tubules, but a very low survival rate from the 21st to 25th day corresponding to the presence of infective larvae in the haemocoel, head and mouth parts.

R.T.L.

## 77—Aquarist and Pondkeeper.

- a. ELKAN, E., 1953.—“A worm infection of toad skin.” **17** (10), 209-212.

(77a) [A fuller account of this paper appeared in *Proc. zool. Soc. Lond.*, 1952, **122**, 121-126. For abstract see *Helm. Abs.*, **21**, No. 488b.]

## 78—Archives de l'Institut Pasteur d'Algérie.

- a. BALOZET, L., 1953.—“Trématodes larvaires de l'Afrique du Nord. Cercaires cotylicerques.” **31** (1), 75-83.  
b. SIMITCH, T., NEVENITCH, V. & PETROVITCH, Z., 1953.—“*Citellus citellus* animal de choix pour démontrer l'identité biologique entre *Hymenolepis nana*, de l'homme, et *H. nana* var. *fraterna*, du rat.” **31** (1), 84-90.

(78a) Balozet describes from Algeria *Cercaria inaurata* n.sp. from *Melanopsis algerica* and *C. koleae* n.sp. from *Ammicola dupotetiana*. The former differs from *C. myzura* in its larger size, the greater number of its penetration glands and the mosaic arrangement of the caudal glands. The latter is characterized by the absence of a pharynx. Both cercariae belong to the cotylocercous group of cercariae. The other cercariae of this group which occur in fresh water are listed.

R.T.L.

(78b) Experiments are recounted which show that *Citellus citellus* is the experimental animal of choice to demonstrate the identity of *Hymenolepis nana* of man and *H. nana* var. *fraterna* of the rat and of *C. citellus*.

R.T.L.

## 79—Archives of Surgery. Chicago.

- a. RENNER, R. R., ROEMER, F. & TELLE, L. O., 1953.—“Resection of left lobe of liver for echinococcus cyst.” **66** (2), 257-259.

**80—Arkiv för Zoologi.**

- a. WIESER, W., 1953.—“Die Beziehung zwischen Mundhöhlengestalt, Ernährungsweise und Vorkommen bei freilebenden marinen Nematoden. Eine ökologisch-morphologische Studie.” *Ser. 2*, 4 (5), 439–484. [English summary pp. 480–481.]

(80a) Wieser has made a study of the structure of the stoma in marine nematodes correlating it with their food habits and distribution. He makes the following four groups: (1a) without mouth cavity, feeding by sucking in soft, small particles, 97 genera; (1b) mouth cup-like, conical or cylindrical, feeding by suction and by active movement of lip and fore part of mouth cavity, 73 genera; (2a) mouth cavity with small armature, food scraped from surface of larger bodies or pierced and contents sucked out, 104 genera; (2b) mouth cavity with powerful armour of teeth etc. mostly predators swallowing prey whole or piercing it and sucking out contents, 87 genera. In the oecological section the distribution of the groups is discussed in relation to the following habitats: (i) exposed algae, (ii) sheltered algae, (iii) fine littoral sands rich in deposits, (iv) fine littoral sands poor in deposits, (v) coarse sands poor in deposits, (vi) littoral muddy sands, (vii) sublittoral shells and coarse sands, (viii) sublittoral fine sands and various muds, (ix) special muds.

T.G.

**81—Atti della Accademia Nazionale dei Lincei. Rendiconti. Classe di Scienze Fisiche, Matematiche e Naturali.**

- a. BIOCCA, E. & LEROUX, P. L., 1953.—“Osservazioni sul ciclo evolutivo di un nuovo echinostomide.” *Serie 8*, 14 (4), 539–544.

(81a) *Bulinus contortus*, collected in Sardinia, discharged echinostome cercariae which encysted in local *Limnaea stagnalis*, *Physa* sp. and *B. contortus*. The collar spines numbered 43, which distinguished this form from *Cercaria variechinata* reported from *B. contortus* and *Physopsis africana* in the Fezzan. Domestic ducks resisted infection but albino laboratory rats were very susceptible. The adults are being described by Dollfus.

R.T.L.

**82—Australian Journal of Agricultural Research.**

- a. STEWART, D. F. & GORDON, H. McL., 1953.—“Studies on resistance of sheep to infestation with *Haemonchus contortus* and *Trichostrongylus* spp. and on the immunological reactions of sheep exposed to infestation. VI. The influence of age and nutrition on resistance to *Trichostrongylus colubriformis*.” 4 (3), 340–348.

(82a) When ten sheep, born in concrete pens and kept worm-free for three to four years, were given an initial infection with *Trichostrongylus colubriformis* larvae, seven died. This is striking evidence that resistance was not due solely to increasing age. When sheep were fed on a poor diet and others on an adequate or high protein diet, and then exposed to infection with 40,000 to 100,000 larvae more of the former developed infections. In lambs kept worm-free from birth and then dosed with 20,000 larvae, infections developed almost equally in those fed on a poor diet and on a high protein diet. Those fed on the low nutrition plane successfully withstood subsequent challenge doses of up to 300,000 larvae. Previous exposure to infection apparently exercised more influence on resistance than did diet. R.T.L.

**83—Australian Journal of Zoology.**

- a. DURIE, P. H., 1953.—“The paramphistomes (Trematoda) of Australian ruminants. II. The life history of *Ceylonocotyle streptocoelium* (Fischöeder) Näsmark and of *Paramphistomum ichikawai* Fukui.” 1 (2), 193–222.  
 b. KEITH, R. K., 1953.—“The differentiation of the infective larvae of some common nematode parasites of cattle.” 1 (2), 223–235.  
 c. ROBERTS, F. H. S., 1953.—“*Zygoribatula longiporosa* Hammer (Oribatei: Acarina), an intermediate host of *Moniezia benedeni* (Moniez) (Anoplocephalidae: Cestoda) in Australia.” 1 (2), 239–241.

(83a) Durie has completed experimentally the life-cycle of *Ceylonocotyle streptocoelium* and *Paramphistomum ichikawai* in the aquatic snails *Glyptamorus gilberti* and *Segnitilia alpheni*



respectively. At 27°C. eggs of *C. streptocoelium* hatch in 16 days, those of *P. ichikawai* in 12 days; cercariae are shed from the snails 34 days and 25 days respectively after infection; eggs of *C. streptocoelium* first appeared in the faeces of experimentally infected sheep 48 days, and of cattle 56 days after feeding them with encysted metacercariae; eggs of *P. ichikawai* first appeared in the faeces of sheep 49–51 days after cysts had been fed. All the larval stages are described and illustrated and there is a brief account of the bionomics of the intermediaries.

S.W.

(83b) Keith has studied the infective larvae of *Strongyloides papillosus*, *Bunostomum phlebotomum*, *Nematodirus* sp., *Oesophagostomum radiatum*, *Cooperia oncophora*, *C. punctata*, *C. pectinata*, *Trichostrongylus axei*, *Ostertagia ostertagi* and *Haemonchus contortus*. He presents tables of measurements, descriptions and photomicrographs and is of the opinion that most of the larvae may be easily identified by the appearance and length of the tail sheath. The length and breadth of the larvae are not reliable criteria. There is a key for the identification of the ten species dealt with.

S.W.

(83c) Roberts has made a survey of the oribatid mites present on calf pastures in south-eastern Queensland. Eight species were recognized of which *Zygoribatula longiporosa* and *Scheloribates* were the most common; a large species of *Galumna* was also fairly common. *Z. longiporosa* was the only species infected with cysticercoids of *Moniezia benedeni*.

S.W.

#### 84—Australian Veterinary Journal.

- a. RIEK, R. F., ROBERTS, F. H. S. & O'SULLIVAN, P. J., 1953.—“Further observations on the epidemiology of parasitic gastro-enteritis of cattle.” 29 (5), 122–128.
- b. GORDON, H. McL., 1953.—“Studies on anthelmintics for sheep: chlorinated benzenes.” 29 (6), 164–167.
- c. STEWART, J. R., 1953.—“Heart worms in Sydney.” [Correspondence.] 29 (6), 176.

(84a) The conclusions on the epidemiology of parasitic gastro-enteritis in cattle, based on regular faecal examinations of herds in coastal Queensland, and published in 1952, have now been confirmed. Heavy infections with *Haemonchus contortus* are recorded in calves exposed for the first time during midwinter under severe drought conditions; these were accompanied by rapid and significant increases in *Cooperia pectinata*, *C. punctata*, *Trichostrongylus axei* and *Ostertagia ostertagi*, but infections with *Bunostomum phlebotomum* remained low. Attention is drawn to the influence on outbreaks of disease of overstocking, heavy dews and the prevalence of larvae during the winter. *Cooperia oncophora* in cattle is found only at relatively high altitudes in the south-east of Queensland, indicating that this species is extremely susceptible to slight changes in temperature. *Nematodirus* sp. is present in numbers only in cattle in association with sheep. *B. phlebotomum* does not survive in areas with an average rainfall below 24 to 25 inches annually.

R.T.L.

(84b) Although some chlorinated benzenes are efficient against *Haemonchus contortus* and *Trichostrongylus* sp., they are not effective against *Oesophagostomum columbianum*, *Fasciola hepatica* or amphistomes in sheep. Orthodichlorobenzene is apparently more efficient than the para-compound but tri and tetrachlorobenzenes and bromobenzene have no effect. The chlorinated benzenes are only effective when injected into the abomasum. When used in a drench for sheep, they should be mixed with, or follow a dose of copper sulphate solution. The dosages of these compounds necessary to give a high efficiency against *Trichostrongylus* spp. in sheep are toxic and their taste persists in the mutton.

R.T.L.

(84c) Stewart confirms Seddon's report in 1950 of heartworm in Sydney [for abstract see Helm. Abs., 19, No. 817a] and instances a case of *Dirofilaria immitis* in a dog at Darling Point, Sydney. At post-mortem, about 100 worms were taken from the heart. The dog had never had contact with dogs from Queensland or elsewhere as far as the owner knew.

R.T.L.

**85—Berliner und Münchener Tierärztliche Wochenschrift.**

- a. MEHLS, H. J., 1953.—“Zu der Veröffentlichung von Prof. Liebmann ‘Über die Verwendung proteolytischer Fermente zur Bekämpfung der Nematoden der Haustiere’ (BMTW 1953, 2, 17).” **66** (10), 157–158.
- b. RINDFLEISCH-SEYFARTH, M., 1953.—“Eine neue Behandlungsmethode der Syngamose (Lufttröhrenwurmkrankheit).” **66** (12), 185–186.
- c. NICKEL, E. A., 1953.—“Ein Beitrag zur Biologie und Pathogenität des Geflügelhaarwurms *Capillaria caudinflata* (Molin 1858).” **66** (14), 245–248. [English summary p. 248.]

(85a) Mehls points out that in the form of Nematolyt, which has been used with success particularly in small animal practice, the proteolytic enzymes recommended by Liebmann [for abstract see Helm. Abs., 22, No. 16a] for the treatment of nematode infections of domestic animals have already been introduced into veterinary practice. A.E.F.

(85b) In this brief note, Rindfleisch-Seyfarth describes a new treatment for syngamiasis in chicks. The bottom of a cardboard box is strewn with a Marienfelde product (with a barium antimonyl tartrate basis) with the provisional name of “Trachea-worm powder”; affected chicks are placed in the box, the lid is put on, and the box is agitated to make the chicks run about and flap their wings. This stirs the powder up and after about ten minutes the chicks will have inhaled enough powder and they are removed from the box into fresh air. The author states that 25 gm. of the powder suffices for 50 chicks and claims to have had 100% success with this treatment. A slight conjunctivitis clears up within two to three days. A.E.F.

(85c) Nickel points out that *Capillaria caudinflata* is an important cause of serious infection and death among domestic fowls in Germany. He gives an account of the life-history (the intermediary in Germany is the earthworm *Allolobophora caliginosa*) and bionomics of *C. caudinflata*, and describes the pathology of the infection in the fowl. A.E.F.

**86—Boletín de Informaciones Parasitarias Chilenas.**

- a. NÁQUIRA V., F., ZIPPER A., J. & NEGhme R., A., 1953.—“Encuesta para investigar la frecuencia de la hidatidosis humana en la provincia de Valdivia (Comunas de Lanco y Panguipulli).” **8** (1), 7–8. [English summary p. 8.]
- b. FAIGUENBAUM A., J., 1953.—“Triquinosis y cortisona.” **8** (1), 9–11. [English summary p. 11.]
- c. FANTA N., E., 1953.—“Principales tratamientos de las parasitosis intestinales en los niños.” **8** (1), 15–17.

(86a) Of 2,691 persons examined for subclinical hydatid by the Casoni test, Ghedini-Weinberg reaction and/or the conditioned haemolysis test, 372 were positive to at least one. Positive reactions to the various tests coincided as follows: Casoni and conditioned haemolysis, 26 cases; Casoni and Ghedini-Weinberg, 18 cases; Ghedini-Weinberg and conditioned haemolysis 22 cases. In only one case were all three positive. P.M.B.

(86b) A case of trichinosis was successfully treated with cortisone. Although a striking clinical improvement resulted within two days, it is recommended that treatment at a reduced dosage be continued for about two weeks. The literature on previous cases is reviewed. P.M.B.

**87—British Journal of Surgery.**

- a. MORRIS, D. G., 1953.—“Intra-abdominal hydatid cyst causing renal failure.” **40** (162), 402.

**88—British Medical Journal.**

- a. ANON., 1953.—“Tropical diseases in Britain.” [Annotation.] Year 1953, 1 (4819), 1096.
- b. EVANS, A. D. & LENNOX, M., 1953.—“An outbreak of trichiniasis in Barry, Glamorgan. Improved technique for demonstration of Trichinella in muscle.” Year 1953, 2 (4828), 131–133.
- c. BOASE, A. J., 1953.—“Tropical diseases in Britain.” [Correspondence.] Year 1953, 2 (4828), 149.



- d. NICOL, B., 1953.—“Tropical diseases in Britain.” [Correspondence.] Year 1953, 2 (4830), 288.

(88a) In this unsigned annotation, it is stated that among other possible sequels of service in the East, intestinal infections with worms may occur whenever sanitation is ineffective but “in otherwise healthy Europeans are of little significance”. True hookworm disease is stated to occur “only in debilitated populations suffering from heavy infestations superimposed on malnutrition and the avitaminoses; it is not seen in the well-nourished”. R.T.L.

(88b) An outbreak of trichinellosis involving at least 25 people occurred in Barry, Wales, in 1952. The infection came from a district in which 47 cases had previously been incriminated and was derived from sausage-meat made from a pig imported from Pembrokeshire. Live *Trichinella* larvae were demonstrated in rats and pigs from the suspected farms. A modified technique for the diagnosis of larvae which utilizes peptic and tryptic digestion of muscle and leaves the larvae still motile revealed nearly twice as many larvae as did the technique described by Young (1947). R.T.L.

(88c) Commenting on a recent annotation entitled “Tropical Diseases in Britain” [for abstract see No. 88a above] Boase warns ophthalmologists to bear onchocerciasis in mind and quotes a recent case of “glare asthenopia” with 6/4 vision which revealed a typical, though mild, nummular keratitis and numerous microfilariae in the aqueous of each eye. R.T.L.

(88d) The annotation “Tropical Diseases in Britain” [for abstract see No. 88a above] stated that “true hookworm disease occurs only in debilitated populations suffering from heavy infestations superimposed on malnutrition and the avitaminoses; it is not seen in the well-nourished”. Nicol cites two instances of severe debility due to ancylostomiasis in senior European officers who did not suffer from malnutrition or avitaminoses. R.T.L.

### 89—Bulletin of Entomological Research.

- a. LEWIS, D. J., 1953.—“*Simulium damnosum* and its relation to onchocerciasis in the Anglo-Egyptian Sudan.” 43 (4), 597-644.

(89a) Lewis presents a study of the distribution, breeding and biting habits of *Simulium damnosum*, the vector of *Onchocerca volvulus* in the Sudan. The infected areas, which are shown on a map, are mainly along the middle reaches of the southern rivers west of the Upper Nile and above the great swamp region. The area is relatively unimportant and unproductive and no towns are affected. The incidence of blindness varies from under 1% to 10%. The distribution of *Simulium* is wider, particularly along the Blue Nile and along the Nile itself below Khartoum. Most of the observations were carried out at Mvolo and others at Raffili and Wad Medani. Transmission occurs mainly during the rains but near certain rivers it may take place in the dry season. A detailed account is given of the changes in the organs of the *Simulium* during the development of larvae. Microfilariae of *Acanthocheilonema perstans* and several other unidentified nematodes were sometimes present in freshly ingested blood. Dimethyl phthalate was found a very effective repellent if used with care. There are 44 text figures and an extensive bibliography. P.M.B.

### 90—Bulletin de la Société de Pathologie Exotique.

- a. BROUNST, G. & NAFFAH, N., 1953.—“Un foyer de filariose au Liban. Traitement par le diéthylcarbazine. Les résultats d'un essai de dépistage par l'intradermo-réaction.” 46 (2), 191-194.
- b. DESCHIENS, R. & MAUZÉ, J., 1953.—“Action de la cortisone dans l'éosinophilie tropicale et dans les éosinophilies parasitaires.” 46 (2), 214-216.
- c. RAVISSE, P., 1953.—“Sur un cas de bilharziose intestinale à *Schistosoma intercalatum*.” 46 (3), 327-328.
- d. HOLSTEIN, M., 1953.—“Enquêtes sur l'onchocercose le long de la Volta noire (1950).” 46 (3), 329-334.
- e. BAYLET, R., 1953.—“Considérations sur le traitement local de l'onchocercose en particulier par injection de Notézine intrakystique.” 46 (3), 335-338.

- f. BEVACQUA, R., 1953.—"Infestations provoquées par les helminthes chez les enfants d'une école primaire de Milan." 46 (3), 406-411.
- g. CAMAIN, R., 1953.—"Schistosomiasis génitales féminines et masculines à *S. haematobium* observées en Afrique Occidentale Française." 46 (3), 412-434.
- h. TRINCÃO, C., GOUVÊIA, E., PARREIRA, F. & FRANCO, A., 1953.—"Les variations du cuivre et du zinc sanguins au cours des hypersidérémies provoquées dans l'ankylostomiasis." 46 (3), 434-440.
- i. TRINCÃO, C., GOUVÊIA, E., PARREIRA, F. & FRANCO, A., 1953.—"La dysprotidémie dans l'ankylostomiasis." 46 (3), 440-445.
- j. HAMON, J., 1953.—"Apparition à la Réunion d'une résistance au DDT chez *Culex fatigans* Wiedemann, principal vecteur de la filariose à *Wuchereria bancrofti* dans l'île." 46 (3), 454-463.
- k. ANSARI, N. & FAGHIH, M., 1953.—"Contribution à l'étude de la bilharziose en Iran." 46 (4), 515-526.
- l. OVAZZA, M., 1953.—"L'onchocercose humaine et son aspect entomologique dans le Sud de l'A.E.F." 46 (4), 575-586.

(90a) A Lebanese case of filariasis bancrofti, previously diagnosed as hydrocele and treated surgically, was given two courses of hetrazan, after which microfilariae disappeared from the blood. Three other symptomless cases in the same family became negative for microfilariae after one course of treatment. A few microfilariae were found in the blood of three more people, making a total of seven. Filarial antigen was found of use in diagnosis. [Four of these cases were recorded in *Rev. méd. Moy. Or.*, 1951, 8, 355-357.] P.M.B.

(90b) Cortisone, although effective in the treatment of ten cases of non-parasitic tropical eosinophilia, was ineffective in two cases of eosinophilia due to helminth infection. P.M.B.

(90c) Ravisce describes a case of *Schistosoma intercalatum* infection in a 30-year-old woman. This is the first case to be reported in the Middle Congo since 1920. S.W.

(90d) Holstein investigated the incidence of onchocerciasis in the District of Bobo-Dioulasso and found it to be highly endemic along the Black Volta and its tributaries. *Simulium damnosum* was the most common species found, biting both by day and night, and of 243 flies dissected, 2.8% were found to be infected. The incidence (based on the finding of nodules) was: men 53.5%, women 43.6% and children 16.6% infected. The distribution of the nodules on the body was different from that found in the White and Red Volta regions, but similar to that previously reported in the Gold Coast. Blindness was found in 28% of the people examined. S.W.

(90e) Baylet has tried injecting 1% notezine into *Onchocerca* nodules without much success. There was no apparent effect on the filariae in the skin or the nodules and the method proved to be impracticable because of the size of the nodules and the difficulty of finding them all. S.W.

(90f) Bevacqua presents a statistical analysis of the helminth incidence in 538 school-children in Milan; 154 were infected. *Trichuris trichiura* occurs more commonly in boys than in girls, *Ascaris lumbricoides* equally in both sexes. *Taenia saginata*, *Enterobius vermicularis* and *Dipylidium caninum* were also found. S.W.

(90g) Camain reviews previous accounts of schistosomiasis haematobia of the genitalia. He gives detailed case reports of ten instances in women and six in men, seen during two years at the Pasteur Institute in Dakar. S.W.

(90h) Trincão *et al.* have studied the effect on the copper and zinc in the serum, of oral and intravenous iron therapy in patients suffering from hookworm anaemia. They found that the copper content tended to fall as the iron in the serum rose, but that the variations in the zinc content were not constant. S.W.

(90i) Trincão *et al.* in their work on dysprotidaemia in ancylostomiasis find their results in agreement with those of Pellicciota, and Larizza & Ventura but in disagreement with those of all other workers. S.W.



(90j) Hamon reports that in Réunion, about one year after a campaign against *Culex fatigans*, a race of *C. fatigans* appeared in which both 4th-stage larvae and adults were resistant to D.D.T.; they were also less sensitive to  $\gamma$ -benzene hexachloride. s.w.

(90k) An investigation was made into the occurrence of schistosomiasis haematobia in the Khuzistan area of Persia, where new irrigation schemes are likely to lead to an increase in the prevalence of the disease. The area covers about 50,000 sq. km. and has a population of about 1,500,000. At Ahwaz two out of 93 children had *Schistosoma haematobium* eggs in the urine but the infection may have been acquired elsewhere and no Bulinus were found. At Hamidieh four out of 29 children were infected but were known to have visited the area of Mian Ab; Bulinus have been found in this district. The Mian Ab region is highly endemic: at Ahoudasht 32 of the population of 50 or 60 were examined and 25 had numerous eggs in the urine; at Seid Khazer nine out of 20 and at Maravané five out of 12 examinations were positive; many Bulinus shells but no living specimens were found. At Abadan no case was found in 150 examinations of children but potential molluscan vectors were found. In 1950, 136 out of 17,630 and in 1951, 33 out of 15,790 urine specimens examined at Abadan contained eggs of *S. haematobium*. P.M.B.

(90l) Although various authors report finding *Simulium damnosum* and *S. albivirgatum* in the same areas, Ovazza found that near Brazzaville on the Congo the boundary between the two species is sharply defined and is closely associated with the limit of the sand. A map shows the river systems, the boundaries of sand and forest and the distribution of the two species of *Simulium* and of known cases of onchocerciasis. The breeding places of *S. damnosum* appear to be limited to those parts of the rivers flowing through the western savannah and forest, and those of *S. albivirgatum* to the rivers of the Bateke savannah to the east. The incidence of onchocerciasis in parts of the *S. damnosum* zone was unexpectedly low, although cases were found scattered over a wide area: only six out of 414 persons examined in two villages on the Djoué had microfilariae (1.44%) but at Tombo on the Congo near Brazzaville nearly all the men had nodules. The *S. damnosum* area almost joins the Gabon onchocerciasis area. In the *S. albivirgatum* zone no microfilariae were found in 226 persons examined except for one previously known, non-autochthonous case. Of 724 *S. damnosum* caught at Kibossi and at Goma-tsetse on the Djoué, infective larvae were present in 23 and sausage-stage larvae in 59. No larvae were found in a total of 996 *S. albivirgatum* from various parts well within the zone where this species occurs. P.M.B.

## 91—Bulletin of Zoological Nomenclature.

- a. INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE, 1953.—“Documents relevant to the consideration of the problem of securing greater stability in zoological nomenclature.” 8 (1/3), 5–108.
- b. INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE, 1953.—“Documents relating to the question whether ‘neotypes’ should be recognised in the ‘Règles’ as a category of type specimens.” 8 (4/5), 109–166.
- c. INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE, 1953.—“Documents relating to the question of the reform of the provisions in the ‘Règles’ relating to the naming of families and lower suprageneric groups.” 8 (6/9), 167–282.
- d. INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE, 1953.—“Documents relevant to the consideration of the problem of regulating the naming of Orders, Classes and other taxonomic categories above the family level.” 10 (1/2), 2–60.

## 92—Canadian Journal of Comparative Medicine and Veterinary Science.

- a. FRANK, J. F., 1953.—“A note on the experimental transmission of enterohepatitis of turkeys by arthropods.” 17 (5), 230–231.
- b. DUNN, A. M., 1953.—“Phenothiazine idiosyncrasy in a sheep.” 17 (7), 317–318.

(92a) Frank had previously shown that *Musca domestica* and *Lucilia* sp. can carry embryonated eggs of *Heterakis gallinae* from one place to another mechanically. He has now demonstrated experimentally that grasshoppers, which are eaten in large numbers by turkeys,

can carry the eggs in their gut for at least 96 hours and can initiate "blackhead" when fed to turkeys.

R.T.L.

(92b) Dunn reports a case of fatal phenothiazine poisoning in a Scottish Blackface hogg, 11 months old. The sheep was one of a flock, each of which received 47 gm., 45 gm. and 48 gm. phenothiazine (including dispersion agent) on 30th Sept. 1952, 22nd Jan. 1953 and 17th March 1953 respectively. The hogg showed signs of sluggishness following the first two treatments and died 18 hours after the third. None of the rest of the flock showed any toxic symptoms. At post-mortem examination, generalized congestion of all organs but the spleen was observed. It is concluded that the death resulted from phenothiazine sensitivity. S.W.

### 93—Canadian Medical Association Journal.

- a. MILLER, M. J., 1953.—"Hydatid infection in Canada." 68 (5), 423-434.

(93a) In an investigation of the source and prevalence of hydatid disease in the Indians in the Indian Reservations in British Columbia, Alberta and the Northwest Territories, 32 out of 114 dogs from 28 villages were found to be positive for *Echinococcus granulosus* at autopsy. A table showing the incidence in dogs in each village shows that this was well over 50% in the "Carriere" group of Indians in the Stuart and Babine-Lakes area, while in the dogs of certain other Indian tribes in the Northwest Territories the rate was 10%-15%. In many of the animals thousands of the worms were present. The factors determining the infection rate in dogs in an area are (i) coexistence of moose or caribou and wolves, (ii) prevalence of moose or caribou, (iii) extent to which moose or caribou are used as dog or human food, or as a source of buckskin, (iv) extent to which dogs are used by the natives, (v) the importance of trapping animals for fur and (vi) the level of prosperity in the community. 90% of 141 patients with autochthonous hydatid recorded during the past five years were in northern British Columbia and Alberta, the Yukon and the Northwest Territories; the remaining cases occurred in Saskatchewan, Manitoba and Ontario. Three of the cases were in Eskimos, 136 in Indians and 2 in white individuals. Their distribution is shown on a map.

R.T.L.

### 94—Chronicle of the World Health Organization.

- a. ANON., 1953.—"Filariasis survey in the Maldive Islands." 7 (5), 118-123.

(94a) [This is a summary of a paper by M. O. T. Iyengar published in *Bull. World Hlth Org.*, 1952, 7, 375-403.]

### 95—Circular. Florida Agricultural Experiment Station.

- a. SWANK, Jr., G. & PERRY, V. G., 1953.—"Control of disease in celery seedbeds with methyl bromide." No. S-55, 8 pp.

(95a) The most important nematodes attacking celery in seed-beds are species of *Meloidogyne* and *Trichodorus* causing root-knot and stubby root diseases respectively. Good control has been obtained consistently in the Sanford area by using methyl bromide at 1 lb. per 50 sq. ft. applied under an air-tight cover which is left in place for 48 hours; after this at least 24 hours should be allowed for aeration before sowing the celery.

M.T.F.

### 96—Comptes Rendus des Séances de l'Académie des Sciences. Paris.

- a. GALLIARD, H., LAPIERRE, J., BERDONNEAU, R. & LARIVIÈRE, M., 1953.—"Effets de la cortisone et de l'ACTH sur l'évolution et l'éosinophilie dans certaines infestations à helminthes humaines et expérimentales." 236 (6), 639-640.

(96a) Galliard *et al.* treated two dogs infected with *Strongyloides stercoralis* by giving injections of 25 mg. of cortisone every day for six days. In one there was a sudden drop followed by a rise in the number of larvae in the faeces, but in the second the number continued to rise steadily. Both infections were maintained. In two dogs spontaneously cured of infection,



the Thorn test was positive; in the two dogs treated with cortisone it was negative. In secondary hydatid disease and experimental trichinelliasis it was positive, but in man it was negative in two out of three cases of strongyloidiasis and in loiasis. S.W.

### 97—Deutsche Tierärztliche Wochenschrift.

- a. HIERONYMI, E., 1953.—“Hautreaktionen im unspezifischen Wirt durch wandernde Parasitenlarven.” 60 (27/30), 325–326.

(97a) Hieronymi draws attention to the fact that percutaneous infection of unsuitable hosts by parasite larvae gives rise to skin reactions which are absent when the larvae enter their natural host. As examples of this host-parasite relationship he instances cercarial dermatitis and creeping eruption caused by *Gastrophilus* larvae and by larvae of *Ancylostoma braziliense* and *Uncinaria stenocephala* (all in man). A.E.F.

### 98—East African Medical Journal.

- a. MACKEY, J. P., 1953.—“The host-parasite relationships between man and his tissue invasive ‘parasites’ in East Africa as a basis for medical policy.” 30 (1), 13–41.  
b. PIERS, F., 1953.—“Onchocerciasis with cutaneous lesions in a European.” 30 (3), 111–113.

(98a) As a basis for a preventive and clinical medical policy for East Africa, Mackey outlines the host-parasite relationships of the various endemic helminth infections there. He reaches the conclusion that those parasites which have evolved for a very long time under hyperendemic conditions eventually become perfect in their host-parasite relationship with man under the same conditions. The relatively sound host-parasite relationships which subsist between the mass of the East African native population, who are mainly carriers, and hookworm, *Ascaris*, schistosomes and filarial worms, warrant the present policy of general non-interference, save where, exceptionally, a high proportion of infections result in disease rather than in carrier states. On the other hand, *Onchocerca volvulus* has failed to evolve into satisfactory relationship with man probably because its vector is highly exacting in the location of its breeding grounds. It has never become widely hyperendemic. Consequently, neither man nor the parasite has undergone the selective processes of survival which ultimately determine the evolution of a satisfactory host-parasite relationship. This is held to justify the conclusion that medical policy in this instance should be directed towards diagnosis, cure and prevention by all available means. R.T.L.

(98b) Onchocerciasis is rare among Europeans in East Africa. Piers has seen only four cases. One of these showed the three classical symptoms, pruritus, punctate keratitis and subcutaneous nodules, but skin snips were negative. Hetrazan, after producing a violent reaction, proved highly effective in suppressing the more troublesome cutaneous and ocular symptoms. The drug is chiefly repressive but the symptomatic relief is so great that “chronic intermittent dosage” appears to be justified. R.T.L.

### 99—Experimental Parasitology. New York.

- a. CLARKE, A. S., 1953.—“Maturation of the plerocercoid of the pseudophyllidean cestode *Schistocephalus solidus* in alien hosts.” 2 (3), 223–229.  
b. NEWTON, W. L., 1953.—“The inheritance of susceptibility to infection with *Schistosoma mansoni* in *Australorbis glabratus*.” 2 (3), 242–257.  
c. OLIVIER, L., VON BRAND, T. & MEHLMAN, B., 1953.—“The influence of lack of oxygen on *Schistosoma mansoni* cercariae and on infected *Australorbis glabratus*.” 2 (3), 258–270.  
d. MALDONADO, J. F. & ACOSTA-MATIENZO, J., 1953.—“A comparison of fecal examination procedures in the diagnosis of schistosomiasis mansoni.” 2 (3), 294–310.

(99a) Clarke found that pigeons were satisfactory experimental hosts for *Schistocephalus solidus*. They were infected either by feeding them with infected sticklebacks or with gelatin capsules containing larvae removed from the fish; the latter proved to be the more reliable method for ensuring maturation of the worm and the production of fertile eggs. Feeding free plerocercoids did not produce infections in pigeons. He found also that the *Schistocephalus*

larvae would mature and produce viable eggs if they were inserted into the abdominal cavity of mice through a small incision; insertion into a pocket under the skin was not so successful. In mice, larvae which had not started to produce proglottides did not survive but those which proglottides did so irrespective of size.

(99b) Working with a Brazilian and a Puerto Rican strain of *Australorbis glabratus* Newton has demonstrated that susceptibility to infection with *Schistosoma mansoni* is a heritable character. Under standard conditions 514 Puerto Rican snails, 7-9 mm. in size, were each exposed to 10 miracidia less than 3 hours old; 463 survived and 95% of these were infected. None of more than 450 Brazilian snails (both red and pigmented) when exposed at a size of 7 mm. or larger became infected, but a few infections were obtained when snails were exposed at 1 or 2 days old. Some of the  $F_1$  generation from crosses were susceptible; the  $F_2$  population derived from self-fertilized non-susceptible parents showed infection rates with a continuous type of distribution from 3% to 58%.  $F_3$  populations from non-susceptible  $F_2$  parents showed infection rates ranging from 0% to 82%. The susceptibility of red  $F_2$  progeny was slightly but significantly, greater than that of pigmented  $F_2$  snails.

(99c) When kept anaerobically normal *Australorbis glabratus* can survive 16 hours. Olivier *et al.* found that when the snails were infected with *Schistosoma mansoni* they could survive six hours but were mostly dead in 16. They believe this to be correlated with the amount of polysaccharide stored by the snails, which is much less in infected than in normal snails. When infected survivors were transferred to aerobic conditions normal cercariae were shed the following day. Under anaerobic conditions the cercarial shedding rate was markedly reduced and the cercariae died rapidly. An oxygen concentration of 5% was necessary to ensure a normal cercarial shedding rate but concentrations as low as 0.7% did not appear to harm the cercariae although they were shed far more slowly.

(99d) Maldonado & Acosta-Matienzo have tested the efficacy of five techniques for diagnosing *Schistosoma mansoni* in faeces. These were: direct saline smear, sedimentation in 0.5% glycerine in water, and the HCl-ether,  $\text{Na}_2\text{SO}_4$ -Triton-Ether, and SAEX centrifugation techniques. The last named was described by Loughlin & Spitz in 1949 but has not been evaluated. A number of modifications of the centrifugation techniques were also tested. On the basis of positive diagnosis there was very little difference in the results obtained by all the methods, but the  $\text{Na}_2\text{SO}_4$ -Triton-Ether technique and sedimentation in 0.5% glycerine gave significantly higher numbers of eggs recovered. For rapid confirmation, examination of three thick 22 sq. mm. direct smears was very efficient.

#### 100—FAO Plant Protection Bulletin. Rome.

- a. MILLER, P. R., 1953.—"Plant disease situation in the United States." 1 (8), 113-114.
- b. ANON., 1953.—"Plant quarantine announcements." 1 (8), 124-125.
- c. MULLER, A. S., 1953. "Plant disease problems in Central America." 1 (9), 136-138.

(100a) In Texas and New Mexico black root rot of cotton, caused by *Thielaviopsis basicola*, was invariably found on light sandy soil associated with root galling due to *Meloidogyne* sp.; it was not present on the more common heavy alluvial soil where this eelworm is rarely found on cotton. The repeated association of these two infections suggests more than a chance relationship. *Heterodera trifolii*, hitherto recorded in the U.S.A. from Salt Lake City only, was observed in 1951 in *Trifolium repens* in a lawn in Camarillo, California. Tests confirmed its known host range but *Sesbania* and carnation were new hosts. No development could be obtained on sugar-beet.

(100b) Notification No. F. 6-1/51, dated 25th March, 1953, issued by the Ministry of Food and Agriculture for India, states that potatoes imported from Italy should not be exempted in future from certain regulations. Amongst other certificates now required is one certifying that no case of golden nematode has occurred during the preceding twelve months within five miles of the growing field.



(100c) Although *Heterodera marioni* is found on a number of crops in many vegetable gardens in Central America (i.e. extending from the southern border of Mexico to the northern border of Colombia), it receives no special attention except in the case of tomatoes which do not survive long in heavily infested garden soils. R.T.L.

### 101—Farming in South Africa.

- a. JOUBERT, C. J., 1953.—“The eelworm pests of vegetable and other crop plants.” 28 (325), 117–118.
- b. PONS, J. E., 1953.—“Commercial ‘AA’ certificate for seed potatoes. Addendum to revised regulations.” 28 (327), 206.
- c. ANON., 1953.—“Tetrachlorethylene emulsion. (‘Tetram’.)” 28 (328), 226, 232.

(101b) This addendum to the revised regulations applies only in cases of “AA” certified seed potatoes produced in suitable areas in south-western Free State and north-western Cape. In so far as they concern eelworm infections, the requirements remain unchanged. R.T.L.

(101c) This is merely an announcement by the Division of Veterinary Sciences of South Africa that a mixture of tetrachlorethylene is now available as a remedy against hookworms in sheep, but it can also be used for certain other helminths in sheep, goats and cattle. R.T.L.

### 102—Grower. London.

- a. HIGLEY, J. C., 1953.—“Some new uses for D-D against eelworm.” 39 (15), 731, 733.
- b. MATHER, J. C., 1953.—“New tulip pest a danger to whole industry.” 39 (17), 827.

(102a) Higley cites, as examples of the satisfactory nematocidal use of D-D mixture, the control of *Heterodera rostochiensis* in the early-potato area of Ayrshire, and the control of *Pratylenchus pratensis* in the daffodil fields of Scilly. It is also used in controlling root-knot in glass-houses. Spot injections can be made with a hand injector gun or strip injections with the “Auchincruive” apparatus, either fixed to a tractor tool bar and delivering D-D behind duck-foot tines, or attached to a plough and delivering into the furrow. B.G.P.

(102b) This article, intended for growers, deals briefly with some details of a race of *Ditylenchus dipsaci* attacking tulips and narcissi. The symptoms in narcissi are identical with those produced by the narcissus race of *D. dipsaci*. In tulips discoloured flowers bend sideways due to lesions just below the flower. These lesions are yellowish or purplish and when extensive the epidermis cracks. In forced plants leaves may show tears. Most infested bulbs show no symptoms. Hot-water treatment, if done early, gives good control but damage ensues; the bulbs recover by the second year. Onions, chickweed, bird’s-eye speedwell and annual meadow grass are also attacked. J.B.G.

### 103—Indian Medical Journal.

- a. UKIL, S. C., 1953.—“Worm infections in Koshi area of Saharsa district.” 47 (1), 16–19.

### 104—Indian Veterinary Journal.

- a. MENON, M. N., 1953.—“Trans-thoracic partial oesophagectomy for removal of *Spirocerca lupi* nests on the oesophageal wall in dogs.” 29 (5), 377–380.
- b. RAMANUJACHARI, G. & ALWAR, V. S., 1953.—“On *Simondsia paradoxa* Cobbold, 1864—a parasitic helminth of pigs.” 29 (5), 381–382.
- c. KATTIYAR, R. D., 1953.—“Phenothiazine and iron therapy in relation to haematology of the sheep.” 29 (5), 411–415.
- d. ANANTARAMAN, M. & BALASUBRAMANIAM, G., 1953.—“A strigeid, *Diplostomum duboisi* n.sp., from the Indian kite *Milvus migrans govinda* Sykes.” 29 (6), 465–469.
- e. PARAMANAND RAO, D. S., 1953.—“Spirocercosis in a dog.” 29 (6), 548.

(104b) *Simondsia paradoxa*, hitherto found only in Europe, has been met with frequently in domestic pigs in Madras. Seven out of the 25 carcasses examined had this parasite in the stomach. The male is redescribed and figured. The presence of a well developed gubernaculum is reported for the first time. R.T.L.

(104c) A high percentage of Indian-bred sheep are heavily infected with helminths. Treatment by a single dose of 15 gm. of phenothiazine, when followed by a daily dose of ferrous sulphate, had a significant effect in improving the anaemic condition due chiefly to *Haemonchus contortus*. The egg count was definitely reduced, but *Dictyocaulus filaria* and amphistomes were unaffected by the treatment. R.T.L.

(104d) *Diplostomum duboisi* n.sp. from *Milvus migrans govinda* in Madras has an oval fore-body and a rectangular hind-body. The acetabulum lies in front of the holdfast organ and the anterior testis is L-shaped. Apart from these features it resembles *Bolbophorus orientalis*. R.T.L.

(104e) Rao briefly records the successful treatment with betrazan of a case of *Spirocerca* infection in a dog. Ten tablets (500 gm.) and glucose intravenously were given daily for 10 days. The faeces became negative for *Spirocerca* eggs and the dog's condition improved remarkably. R.T.L.

### 105—Journal of the American Medical Association.

- a. YOUNG, M. D. & HAYNE, I., 1953.—“Gongylonema infection in South Carolina. Report of a case.” 151 (1), 40.

(105a) An immature *Gongylonema*, probably *G. pulchrum*, was removed from the lip of a negress in South Carolina. This is the eighth case of human infection in the U.S.A. and the first in South Carolina. R.T.L.

### 106—Journal of the American Veterinary Medical Association.

- a. PRICE, D. A., HARDY, W. T. & BOUGHTON, I. B., 1953.—“Phenothiazine-salt mixture for control of *Haemonchus contortus* in range sheep.” 123 (917), 132-135.

(106a) A flock of sheep had continual access with free choice to a 1:9 phenothiazine-salt mixture for a period of seven years. A control flock in an adjoining pasture received plain white salt only. The average consumption of the phenothiazine-salt mixture, which varied considerably from month to month and year to year, was slightly under 150 gm. per sheep per month. Graphs show, for each year, the average annual rainfall and the count of *Haemonchus contortus* eggs in the treated and control sheep, the average number of worms counted at autopsy and the average annual estimation of larval development. The data showed that *H. contortus* was satisfactorily controlled over the period under the climatic conditions of the Edwards Plateau which is situated in west central Texas. R.T.L.

### 107—Journal of Helminthology.

- a. DONCASTER, C. C., 1953.—“A study of host-parasite relationships. The potato-root eelworm (*Heterodera rostochiensis*) in black nightshade (*Solanum nigrum*) and tomato.” 27 (1/2), 1-8.
- b. SPEDDING, C. R. W., 1953.—“Variation in the nematode egg content of sheep faeces from day to day.” 27 (1/2), 9-16.
- c. KENDALL, S. B., 1953.—“The life-history of *Limnaea truncatula* under laboratory conditions.” 27 (1/2), 17-28.
- d. GIBSON, T. E., 1953.—“The effect of repeated anthelmintic treatment with phenothiazine on the faecal egg counts of housed horses, with some observations on the life cycle of *Trichonema* spp. in the horse.” 27 (1/2), 29-40.
- e. STANILAND, L. N. & STONE, L. E. W., 1953.—“Chlorphenol and related compounds as nematocides. I.” 27 (1/2), 41-74.
- f. JORDAN, F. T. W., 1953.—“Intestinal infestation of turkey poults with *Plagiorchis* (*Muticoglandularis*) *megalorchis* Rees, 1952 and an experimental study of its life-cycle.” 27 (1/2), 75-80.
- g. GOODEY, T., 1953.—“On certain eelworms, including Bütschli's *Tylenchus fungorum*, obtained from toadstools.” 27 (1/2), 81-94.
- h. LEES, E., 1953.—“An investigation into the method of dispersal of *Panagrellus silusiae*, with particular reference to its desiccation resistance.” 27 (1/2), 95-103.



(107a) Doncaster compares the invasion and rate of development of *Heterodera rostochiensis* in tomato and *Solanum nigrum* and the effects on the host roots. In tomato the number of nematodes per unit weight of root was always greater and after 8 weeks many mature cysts were found. In *S. nigrum*, although many larvae entered the roots, very few developed as far as the third stage and only once was an almost mature male seen. Many degenerating second-stage larvae were found. While tomato roots exhibited stunting and swellings at the site of developing nematodes, *S. nigrum* roots showed shallow necrotic lesions. M.T.F.

(107b) Spedding describes the technique used in his investigation of the day to day variation in the nematode egg counts in three sheep. Faeces were collected every two hours for six days. Although the wet weight of faeces influences the e.p.g. counts the variations in weight do not account for the variations in the eggs per day (e.p.d.) counts. The maximum difference observed in a single sheep was between counts of 3,104 e.p.g. and of 45 e.p.g. thirty hours later. Although there is a parallel between the e.p.g. and e.p.d. counts this is not close enough to allow of comparison between animals. Two of the sheep showed a distinct rhythm in egg output, with peaks at approximately 3-day intervals but the third sheep did not conform to this after the first four days of the experiment. Adequate mixing of the total daily output of faeces would eliminate "within day" variations; "day to day" variations could be eliminated by mixing equal portions of the mixed daily output and sampling this. An electrically driven mixer which will mix faeces without the addition of liquid has given promising results. S.W.

(107c) Kendall has studied, over a period of between three and four years, a colony of *Limnaea truncatula* raised in the laboratory from a single egg mass. Cross fertilization was never observed; sexual maturity, under favourable conditions, could be attained in 23 days; the average number of eggs per egg mass was nearly 14, the maximum number recorded being 31; one egg mass was laid per day throughout the year and egg-laying continued even at temperatures as low as 10°C.-11°C., the amount of available food being one of the main controlling factors; the incubation period of the eggs was dependent on the temperature. Algae formed the principal food of the snails although they probably fed on any available plant material. The length of life appeared to be related to the rate of growth and environmental conditions, especially drought; temperatures below 1.5°C. were not deleterious, the snails remaining active, but those above 20°C. were unfavourable. S.W.

(107d) Six horses were kept for three years under conditions which precluded reinfection with strongyles. Immediately following treatment with 30 gm. phenothiazine no eggs were found in the faeces but after 5-6 weeks the count again became high. Eggs of *Strongylus* were the first to reappear. Treatment was repeated from three to seven times with similar results except that each time the level reached by the egg count was lower and fewer worms were eliminated. Gibson suggests that these results can be explained if the development of large numbers of *Trichonema* spp. is inhibited by the presence of adults in the gut lumen, the larvae only leaving the mucous membrane and developing to maturity after the elimination of adults by anthelmintic treatment. S.W.

(107e) Staniland & Stone have found that, when nematicides of low water-solubility are emulsified with detergents of the alkyl sulphate type, the addition of more detergent can lead to a sudden clearing of the emulsion. This is the phenomenon known as micellar solution or solubilization, and it is probable that nematicides in this state can more readily penetrate media like soil, and membranes like nematode cuticles and egg-shells. They present data for the solubilization of chlorophenol, cresylic acid, xylenol and para-meta-cresol mixture, and list the killing times for a number of compounds used on eelworm wool (*Ditylenchus dipsaci*), chlorophenol being the best of those tested. Solubilized chlorophenol has been successfully used for seed treatment and narcissus bulb baths (*Ditylenchus dipsaci*) and also for treating soil infested with *Heterodera rostochiensis*, laboratory tests having shown that

larvae of the latter species are killed within the egg-shell. [It is not possible to do justice to this detailed paper in a brief abstract.] B.G.P.

(107f) Jordan gives a further account of the outbreak of infection with *Plagiorchis* (*Multiglandularis*) *megalorchis* in turkey poults in Wales, already described by Rees [for abstract see Helm. Abs., 21, No. 29c], with more details of the experimental determination of its life-history. S.W.

(107g) T. Goodey describes and figures *Iotonchium fungorum* (Bütschli, 1873) n.comb. and *I. bifurcatum* n.sp. obtained from rotting basidiomycetous fungi. He discusses their taxonomy, emending the genus *Iotonchium* Cobb, 1920 and creating a new subfamily Iotonchinae in the family Allantonematidae. Males have lobed, dorso-ventrally flattened heads and poorly developed mouth spears. The bursa is very large and the spicules have externally protruding prolongations. There is no gubernaculum. Females have normally shaped heads with well developed spears. The gonad is similar to that found in *Allantonema* and *Tylenchinema* and it is suggested that *Iotonchium* probably becomes parasitic in some fungus-inhabiting insect. J.B.G.

(107h) Lees finds that *Panagrellus silusiae* can survive embedding in cubes of 10% agar gel, with subsequent desiccation for a week, even when the cubes are kept dry for two months. They also survive immobilization in 4-molar glucose for up to 14 days, but it is mainly uterine larvae which recover. They display a positive oxygen taxis, and gravid females a negative geotaxis which leads them to crawl up out of the culture medium. They can then be carried alive from one culture dish to another by vinegar flies, to the legs of which they adhere. B.G.P.

### 108—Journal of Infectious Diseases.

- a. KAGAN, I. G. & LEE, C. L., 1953.—“Duration of acquired immunity of *Schistosomium douthitti* infections in mice following treatment.” 92 (1), 52–57.
- b. THOMAS, E. H., BOZICEVICH, J. & HOYEM, H. M., 1953.—“Flocculation reactions in rabbits experimentally infected with *Trichinella spiralis*.” 92 (1), 89–96.
- c. TINER, J. D., 1953.—“The migration, distribution in the brain, and growth of ascarid larvae in rodents.” 92 (2), 105–113.
- d. SPRENT, J. F. A., 1953.—“On the migratory behavior of the larvae of various *Ascaris* species in white mice. II. Longevity of encapsulated larvae and their resistance to freezing and putrefaction.” 92 (2), 114–117.

(108a) Kagan & Lee describe in detail an experiment on the effect of chemotherapy on the acquired immunity of mice to *Schistosomium douthitti*. Four groups of mice were used of which three acted as controls; all groups were divided into seven series. Group 1 (43 mice) was infected with *S. douthitti*; five series were treated with 2-hydroxy-4-methylol-4,5, dihydro-1,3,2,-dithiastibiole and two with tri-(n-dodecylmercapto)-s-antimonious acid. Group 2 was infected but not treated, group 3 was neither infected nor treated, and group 4 was treated but not infected. Four to six mice from each group were then challenged once with 50 cercariae 8, 9, 19, 20, 24, 34, or 54 days after the end of treatment: they were killed and examined 18 to 20 days later. The average numbers of worms collected from each group were  $17.4 \pm 1.17$ ,  $13.0 \pm 0.98$ ,  $21.6 \pm 1.74$  and  $25.4 \pm 1.47$  respectively, the differences between groups 1 and 2, and 1 and 3 being statistically significant. This indicates that chemotherapy results in a partial loss of acquired immunity. If the figures obtained from the challenging infection at 8, 9 and 19 days are omitted the difference in the mean between groups 1 and 3 disappears, indicating that the acquired immunity is lost about three weeks after an effective treatment. S.W.

(108b) Thomas *et al.* performed flocculation and complement fixation tests on 34 rabbits experimentally infected with *Trichinella spiralis*, and 8 controls. Heat-inactivated serum gave more consistent results than did normal serum. No false positive reactions were obtained in 162 serum samples from 42 uninfected rabbits. The first positive reaction with



both tests was obtained 6 days after the infection; 33 of the infected rabbits showed complement fixation antibodies within 20 days and flocculation antibodies within 27 days. There was a parallel increase in antibody titre, the complement fixation test giving higher titres by 2 or 3 serial dilutions. Although the flocculation test was called positive if a reading of 3+ or 4+ was obtained in a 1:2 serum dilution it seems that a 1+ or 2+ reaction is of value in diagnosis. S.W.

(108c) Tiner describes experiments in which infective ascarid eggs of various species (*Ascaris* sp. from the raccoon, *Ascaris* sp. from the badger, *A. columnaris* from the striped skunk, *A. laevis* from the Alaskan marmot and *Toxocara canis* from the dog) were fed to laboratory mice. These were then killed at various intervals after infection and the distribution and size of the larvae in the brain studied. In those killed ten days after infection the larvae were frequently present in the cerebrum and cerebellum as well as the medulla and other parts of the brain; between the tenth and twentieth days most of the larvae migrated into the medulla and spinal cord, the total number in the central nervous system remaining constant. There appears to be a correlation between the onset of symptoms of nervous impairment and the size of the larvae, the symptoms first occurring when the larvae reach a length of about 1 mm. S.W.

(108d) Sprent has investigated the distribution of ascarid larvae (*Ascaris columnaris*, *A. devosi*, *Toxocara canis*, *T. mystax* and *Toxascaris transfuga*) in mouse carcasses one, two, three, four and six months after infection. In all the species most of the larvae were distributed throughout the general body musculature but in *A. columnaris* and *A. devosi* they were concentrated in the cervical and thoracic region, in *T. transfuga* in the intestinal wall and mesenteric tissues and in *Toxocara canis* a large number were recovered from the brain. *Toxascaris transfuga* was less resistant to cold ( $-20^{\circ}\text{C}.$ ) than were the other species. S.W.

#### 109—Journal of the Louisiana State Medical Society.

- a. KNOX, J. M., 1953.—“Creeping eruption (larva migrans) at Keesler Air Force Base.” 105 (2), 69–72. [Discussion p. 72.]

(109a) Twenty-two cases of creeping eruption were seen at the Keesler Air Force Base at Biloxi on the Gulf Coast of Mississippi in 1951. It is estimated that the incidence on the Mississippi Gulf Coast is one per 2,000 persons. The symptoms fall into three groups: (i) vesicular and bulbous, (ii) urticarial and (iii) erythematous. The first of these is the commonest type and may be mistaken for chemical dermatitis or drug eruption. Freezing with ethyl chloride is still the treatment of choice, although some cases treated with stibranol and hetrazan have been reported upon favourably. In the discussion, Burks stated that the disease was rare in New Orleans until 1951 when numerous cases were seen by dermatologists there. R.T.L.

#### 110—Journal of Parasitology.

- a. OLIVIER, L., 1953.—“Observations on the migration of avian schistosomes in mammals previously unexposed to cercariae.” 39 (3), 237–246.

(110a) The dermatitis in man caused by the cercariae of avian schistosomes is due to a strong allergic reaction and is followed by the destruction of the cercariae while still in the skin, but this reaction only occurs after repeated exposure. Olivier, in a more detailed account of his studies on the survival and migration of avian schistosome cercariae in laboratory mammals, finds that the cercariae of *Trichobilharzia stagnicolae*, *T. physellae* and *T. ocellata*, after penetrating the skin of laboratory mice, migrate to the lungs and produce haemorrhages. The cercariae of *T. ocellata* followed the same migration and produced pulmonary haemorrhages also in hamsters, guinea-pigs, rabbits and rhesus monkeys. Worms were recovered from the lungs, and in several of the experimental animals colourless nodules associated with moribund or dead worms were present in the lungs. In none were worms recovered from the liver. R.T.L.

## 110—Journal of Parasitology (cont.)

- b. PARRA, B. E., 1953.—"*Perutaemia threlkeldi*, n.g., n.sp. (Cestoda: Anoplocephalidae) from *Lagidium peruanum*." 39 (3), 252-255.
- c. STUNKARD, H. W., 1953.—"*Raillietina demerariensis* (Cestoda), from *Proechimys cayennensis trinitatus* of Venezuela." 39 (3), 272-279.
- d. OLIVIER, L. & WEINSTEIN, P. P., 1953.—"Experimental schistosome dermatitis rabbits." 39 (3), 280-291.
- e. KARTMAN, L., 1953.—"On the problem of non-infective microfilariae." 39 (3), 296-299.
- f. SHORT, R. B., 1953.—"A new blood fluke, *Cardicola laruei* n.g., n.sp., (Aporocorylidae) from marine fishes." 39 (3), 304-309.

(110b) *Paranoplocephala threlkeldi* was described by Parra in 1952 from *Lagidium peruanum*, a small rodent which lives in the high sierra of Peru; this cestode is now placed in a new genus, *Perutaemia* n.g., which is distinguished from *Paranoplocephala* because the genital pores are unilateral or irregularly alternate, the testes are numerous and mostly anterior to the ovaries, often extending beyond the osmoregulatory canal, the female glands lie in the middle of the poral side of the segment and the uterus is a transverse tube extending beyond the osmoregulatory canal and towards the ventral face. [*P. threlkeldi* is erroneously termed n.sp. in the title. It now becomes *Perutaemia threlkeldi* (Parra, 1952) n.comb.] R.T.L.

(110c) Specimens of *Raillietina* collected by the Plague Mission to Venezuela from the hystricomorph rodent, *Proechimys cayennensis trinitatus*, agree closely with the descriptions of *R. demerariensis* and *R. demerariensis trinitatae*. There are slight differences attributable to normal variations or to the effects of preservation. Stunkard agrees with Cameron & Rees that native rodents of South America are probably the natural hosts of *R. demerariensis* and the infections in man and monkeys are accidental or incidental. R.T.L.

(110d) That rabbits exposed to avian schistosome cercariae only develop dermatitis if previously sensitized is confirmed by experiments in which cercariae of *Trichobilharzia ocellata* and *T. stagnicolae* were used. Only a very mild erythema followed the first exposures of unsensitized rabbits and there was no cellular response to the worms in the epidermis and corium. They remained alive for as long as 48 hours after penetration. In the epidermis and corium of sensitized rabbits, the cellular response increased in intensity for 48 hours when most of the worms were apparently dead. The skin reactions are illustrated by a series of 16 photomicrographs. The course of sensitization and the dermatitis in rabbit and in man were comparable. R.T.L.

(110e) To determine if the age of microfilariae affects their ability to develop in their intermediate host, Kartman fed *Anopheles quadrimaculatus* on an uninfected dog which had been transfused with blood containing microfilariae of *Dirofilaria immitis*. Filarial development proceeded normally in the mosquitoes fed up to three months after the transfusion. During the first month some of the infective larvae underwent encapsulation. Apparently microfilariae also require to age for a short period before they attain their maximum infectivity, for when recently-shed microfilariae of *D. immitis* obtained from adult females were mixed with whole blood from uninfected dogs and the suspension fed to *A. quadrimaculatus* through animal membrane, none of the mosquitoes was found to be infected 15 days later. A like experiment with microfilariae of *Foleyella brachyoptera*, frog's blood and *Aedes aegypti* gave similar results. R.T.L.

(110f) *Cardicola laruei* n.g., n.sp. is described and figured from the heart of the trout, *Cynoscion arenarius* and *C. nebulosus*. The new genus *Cardicola* belongs to the Aporocorylidae. Its type species is *C. cardicola* (Manter, 1947) n.comb. Like *Psettarium* it has a single testis, but this is a single mass and the vitellaria consist of small follicles, whereas in *Psettarium* the testis is reticulate and the vitellaria consist of tubular acini. The closely related *Paradeontacylix* and *Aporocoryle* have numerous testes. In *Deontacylix* the testis is H-shaped with extra-caecal parts. *Cardicola laruei* differs from *C. cardicola* in having relatively longer anterior caeca, the ovary quadrangular with irregular margins, and the oviduct diagonal and forming a conspicuous fusiform sperm chamber. R.T.L.



## 110—Journal of Parasitology (cont.)

- g. PIEPER, M. B., 1953.—“The life history and germ cell cycle of *Spirorchis artericola* (Ward, 1921).” **39** (3), 310–325.
- h. SENER, C. M., 1953.—“*Xiphidiotrema lockerae*, gen. et sp. nov. (Trematoda: Troglotrema-tidae) from shrews in the northwestern United States.” **39** (3), 341–343.
- i. SCHILLER, E. L., 1953.—“Studies on the helminth fauna of Alaska. XV. Some notes on the cysticercus of *Taenia polyacantha* Leuckart, 1856, from a vole (*Microtus oeconomus operarius* Nelson).” **39** (3), 344–347.
- j. VAN VOLKENBERG, H. L., McMULLEN, D. B., CHRISTIE, J. R. & HARWOOD, P. D., 1953.—“A preliminary list of common names for helminths.” **39** (3), 348–351.
- k. SENER, C. M. & MACY, R. W., 1953.—“A new digenetic trematode (*Cephalouterina dicamptodoni* n.g., n.sp., Pleurogenetinae) from the Pacific giant salamander.” **39** (3), 352–355.

(110g) This is the first detailed account of the germ cell cycle of any member of the family Spirorchidae. *Helisoma trivolvis* were infected with miracidia hatched from eggs of *Spirorchis artericola* obtained from *Chrysemys picta bellii*. Miracidia with 11 to 15 germinal cells in the posterior part of the body cavity develop into mother sporocysts. Daughter sporocysts develop from the germinal cells in the mother sporocyst. Individual germinal cells divide into large cells which give rise to the soma of the daughter sporocyst and small germinal cells which retain the germ plasm. Apharyngeal brevifurcate cercariae with fin folds but without cuticular crest develop within the daughter sporocysts. In the cercariae, the germinal cells divide to form the genital primordium. Four months after exposure to cercariae from laboratory-infected snails, turtles showed masses of eggs containing viable miracidia in the lungs and in the walls of the stomach and intestine. Details are given of development and reproduction in the mother and daughter sporocysts, and provide a picture of the development of larval generations by simple polyembryony. The germ cell cycle resembles that of schistosomes but no germinal masses were seen in the mother sporocyst and the loosely connected groups of germinal cells in the daughter sporocysts appeared to be less definite than in the schistosomes.

R.T.L.

(110h) *Xiphidiotrema lockerae* n.g., n.sp. from *Sorex bendirii palmeri*, *S. palustris navigator* and *S. obscurus permiliensis*, belongs to the subfamily Nanophyetinae of the Troglotrema-tidae. It is unique in possessing a plainly visible stylet in the oral sucker, a postacetabular genital pore and preacetabular testes. The adults measure 0.20–0.32 mm. in length and are pyriform with rounded ends.

R.T.L.

(110i) A tundra vole, *Microtus oeconomus operarius*, caught in Alaska had 47 cysticerci free in the abdominal cavity. The rostellar hooks, although numbering only 44 to 48, were identical in size and shape with those of *Taenia polyacantha*. When removed from the host, the larvae had the gross appearance of plerocercoids described by Baer from European material but when relaxed in water, a posterior vesicle became visible. Two completely developed individuals, otherwise identical with the other larvae, were connected at their posterior ends by a mass of dense tissue.

R.T.L.

(110j) As extension workers and others refuse to employ the Latin names which characterize scientific nomenclature, the American Society of Parasitologists' Committee on Common Names for Helminths publishes a tentative list based on those most widely used in American literature. It is subject to revision as soon as sufficient experience and the accumulation of suggestions warrant.

R.T.L.

(110k) *Cephalouterina dicamptodoni* n.g., n.sp. from *Dicamptodon ensatus* is described as type and only species of a new genus of the Pleurogenetinae, characterized by a dorsal genital pore near the anterior end, short intestinal caeca and a short uterus not extending posterior to the gonads. It differs from *Sonsinoatrema* by the unbranched stem of its excretory vesicle, the distribution of the vitellaria, the position of the genital pore and the extent of the uterus.

R.T.L.

## 110—Journal of Parasitology (cont.)

- l. READ, C. P. & AMREIN, Y. U., 1953.—“North American nematodes of the genus *Pharyngodon* Diesing (Oxyuridae).” **39** (4, Sect. 1), 365-370.
- m. DOUGHERTY, E. C., 1953.—“The axenic cultivation of *Rhabditis briggsae* Dougherty and Nigon, 1949 (Nematoda: Rhabditidae). III. Liver preparations with various supplementation.” **39** (4, Sect. 1), 371-380.
- n. DOUGHERTY, E. C. & KEITH, D. F., 1953.—“The axenic cultivation of *Rhabditis briggsae* Dougherty and Nigon, 1949 (Nematoda: Rhabditidae). IV. Plasma protein fractions with various supplementation.” **39** (4, Sect. 1), 381-384.
- o. KRUIDENIER, F. J., 1953.—“Studies on the formation and function of mucoid glands in cercariae: opisthorchoid cercariae.” **39** (4, Sect. 1), 385-391.
- p. WARD, H. L., 1953.—“A new genus and species, *Floridosentis elongatus*, of Neoechinorhynchidae (Acanthocephala).” **39** (4, Sect. 1), 392-394.
- q. CABLE, R. M., 1953.—“The life cycle of *Parvatrema borinquenae* gen. et sp. nov. (Trematoda: Digenea) and the systematic position of the subfamily Gymnophallinae.” **39** (4, Sect. 1), 408-421.

(110l) To the helminth fauna of reptiles in southern California three new species of *Pharyngodon* are added. *P. giganticus* n.sp. from *Sceloporus graciosus vandenburgianus* differs from *P. extenuatus* in lacking a spicule and in the size and shape of the eggs which are ellipsoidal, slightly flattened on one side, have a cuticular knob at one pole and are 0.112-0.125 mm. long. The female is larger than in any other species of *Pharyngodon*. *P. cnemidophori* n.sp. from *Cnemidophorus tessellatus tessellatus* is distinguished from *P. warneri* by its larger form and shorter female tail; the barrel-shaped eggs measure 0.132-0.148 mm. *P. californiensis* n.sp. from *Coleonyx variegatus* differs from *P. oxkutzcabensis* in having a relatively longer tail measuring 0.912-1.08 mm. in length in the female and bearing 9 to 12 posteriorly directed spines. *P. cubensis* n.sp. is reported from *Tarentola americana* in Cuba. It is closely related to *P. auziensis* but in the female the tail is longer, the eggs larger and the oesophagus shorter. The male lacks a spicule.

R.T.L.

(110m) The cultivation of *Rhabditis briggsae* in the absence of other living organisms requires a complex medium including one or more protein-like substances which Dougherty has termed “factor Rb”. The nature and properties of factor Rb in liver protein and various supplementations of certain unheated liver preparations as media for *R. briggsae* are described. It is apparently associated with the globulin components. No specific known substance except water has as yet been demonstrated to be an absolute requirement for *R. briggsae*. One or more water-soluble vitamins, a carbohydrate and certain mineral salts are essential. Various additional supplementations have been tested without improving growth.

R.T.L.

(110n) By using human plasma as a source of factor Rb, Dougherty & Keith find that *Rhabditis briggsae* requires certain large, heat-stable molecules, non-diffusible in dialysis, in addition to heat-labile factor Rb. Factor Rb is not a glutamine or one of five heat-labile co-enzymes tested. [Some of the results have already been reported in *Nature, Lond.*, 1951, **168**, p.880. For abstract see *Helm. Abs.*, **20**, No. 501d.]

R.T.L.

(110o) Kruidenier has studied the morphology and development of the mucoid glands in the cercariae of four species of Opisthorchidae, two of which are not yet described. The mucoid contents are discharged on the approach of maturity, and form a thin, highly meta-chromatic film over the whole of the cercarial body. These glands do not appear to provide a basis for the separation of groups of opisthorchids.

R.T.L.

(110p) From five out of ten *Mugil cephalus* caught in Biscayne Bay, Florida, Ward collected specimens of an acanthocephalan named *Floridosentis elongatus* n.g., n.sp., t.sp. The new genus belongs to Neoechinorhynchidae and is characterized by a small proboscis with six diagonal rows of five hooks each.

R.T.L.

(110q) *Parvatrema borinquenae* n.g., n.sp. was experimentally reared in *Gallus domesticus*. The cercaria is a minute furcocercous larva developing in a marine clam, *Gemma purpurea*. It becomes an unencysted metacercaria in *Cerithidea costata* which is abundant on



**110—Journal of Parasitology (cont.)**

- r. STOLL, N. R., 1953.—“Axenic cultivation of the parasitic nematode, *Neoaplectana glaseri*, in a fluid medium containing raw liver extract.” 39 (4, Sect. 1), 422-444.
- s. UZMANN, J. R., 1953.—“*Cercaria milfordensis* nov.sp., a microcercous trematode larva from the marine bivalve, *Mytilus edulis* L. with special reference to its effect on the host.” 39 (4, Sect. 1), 445-451.

a mud flat at Cabo Rojo, Puerto Rico. The metacercarial excretory formula is  $2[(2+2)+(2)]$ . It closely resembles that found by Fujita in a Japanese oyster, for which he created the genus *Gymnophalloides* but as the adult of *Gymnophalloides* is still unknown these two genera are considered by Cable to be distinct for the time being. The taxonomy of the gymnophallid trematodes is discussed at length. Brachylaemoidea Allison, 1943 is emended to receive Brachylaemidae and Fellodistomatidae. This latter is emended and contains (i) Haplocladinae Odhner, 1911, emend. for *Haplocladus*, *Tergestia*, *Proctoeces* and *Ancyclocoelium*; (ii) Tandani-colinae Johnston, 1927, emend. for *Tandanicola*, *Pseudosteringophorus* and *Megalomyzon*; (iii) *Gymnophallinae* Odhner, 1905, emend. for *Gymnophallus*, *Gymnophalloides* and *Parvatrema*. The genus *Parvatrema* n.g. differs from *Gymnophallus* in possessing a large, pit-like genital pore distinctly anterior to the ventral sucker and a well developed pharynx.

R.T.L.

(110r) Stoll describes the successful axenic culturing of *Neoaplectana glaseri* from grubs of a Japanese beetle (*Popillia japonica*). They were maintained through more than one generation in acid veal or beef heart infusion broth supplemented by raw liver extract, prepared without heat, acidified and sterilized by Seitz filtration. Larger yields were produced by shaking the cultures in the dark. A stock culture strain isolated and rendered bacteria-free in 1944 has been maintained serially on tissue (usually kidney) on dextrose agar slants. It has retained its infectivity for its host. This is ascribed to the absence of selective environmental factors, owing to the adequacy of the kidney tissue culture medium and to the starting of each stock culture with 100 to 200 worms, sufficient to maintain its genetic heterogeneity. R.T.L.

(110s) *Cercaria milfordensis* n.sp. is a small, stout microcercous larva formed in simple, saccate orange-pigmented sporocysts in the gonad and digestive gland of *Mytilus edulis* from Long Island. It is tentatively referred to the Fellodistomatidae. In the laboratory it was observed that sporocyst development blocks the veins of the mantle, thus seriously diminishing the circulation, and this coincides with the period of annual gonadal development of the host. Heavy infections are probably lethal when oecological conditions are unfavourable to the host.

R.T.L.

**111—Journal of the Royal Army Veterinary Corps.**

- a. MILLER, W. C., 1953.—“Some aspects of the control of parasitic worms in horses.” 24 (1), 1-5.

(111a) Although the horse population of Britain has dropped in thirty-five years from 1½ million to 350,000 in 1951, thoroughbreds have not markedly declined. On many studs parasitic worms still cause serious, sometimes spectacular, losses, but the damage is more often insidious and not fully appreciated during life. As any damage may affect the race-horse's performance, parasitism must always be regarded as a potentially serious matter. In spite of its efficiency as an anthelmintic, phenothiazine has certain real disadvantages. With single shock doses followed by continuous low level dosage, its action appears to be selective and the larger species of *Strongylus* are the least easily controlled. Miller finds that glucarsamide as a follow-up is able to kill all or most of the species which survive phenothiazine treatment. The article concludes with a summary of the principles underlying the control of infected pastures.

R.T.L.

**112—Journal of the Washington Academy of Sciences.**

- a. BABERO, B. B., 1953.—“Studies on the helminth fauna of Alaska: XII. The experimental infection of Alaskan gulls (*Larus glaucescens* Naumann) with *Diphyllbothrium* sp.” 43: 166–168.

(112a) Babero has experimentally infected young Alaskan gulls (*Larus glaucescens*) with *Diphyllbothrium* sp. by feeding them with plerocercoids from *Salmo gairdnerii* taken from Daniels Lake on the Kenai Peninsula. Microscopical examination of the worms recovered as well as those from dogs, foxes, bears and man reveals a wide range of variation in gross appearance. All available evidence indicates that the Alaskan species readily infects *L. glaucescens*, various wild carnivores and man but that the specific identification has not yet been made. The control in the Arctic is therefore a problem of great complexity.

R.T.

**113—Lancet.**

- a. BENSTED, H. J. & ATKINSON, J. D., 1953.—“Hydatid disease. Serological reactions with standardised reagents.” Year 1953, 1 (6754), 265–268.

(113a) Complement fixation and Casoni tests were carried out in 49 cases suspected of having hydatid. Twenty, in all of whom both tests were negative, were found at operation to be non-hydatid cases. Of the 29 shown surgically to be hydatid cases, 25 were positive to the Casoni test and 27 to complement fixation. A new technique employing accurately standardized reagents for the complement fixation test is described as follows: “All reagents were used in unit volumes of 0.25 ml. All sera, including standard, negative controls, and test specimens, were inactivated and set out in doubling dilutions from 1 in 2 to 1 in 128. Antigens diluted 1 in 4, and 2½ doses of complement, were added successively to each tube. After thorough mixing, fixation was allowed to proceed for eighteen hours at +4°C. After standing at room-temperature for one hour the haemolytic system (5% washed sheep cells plus 5 doses of haemolytic amboceptor) was added. The racks were incubated at 37°C. for thirty minutes and preliminary readings were taken. The racks were returned to the refrigerator before the final readings on the degree of haemolysis were recorded . . . It was decided that the standard serum should be the standardising agent and that no antigen should be used which when diluted 1 in 4 for the test did not give full fixation of complement with the standard serum at a dilution previously determined, and which did not in undiluted form by itself fix complement or react with sera from patients not suffering from hydatid disease.” Fluid from individual cysts of ovine or human origin did not give consistent results and those deficient in scolices were consistently poor as antigens.

R.T.

**114—M.S.C. Veterinarian. Michigan State College.**

- a. BORGMAN, R. F., 1953.—“Is *Capillaria plica* harmless?” 13 (2), 111.

(114a) *Capillaria plica* is usually considered to be uncommon and harmless in dogs. Borgman reports a moderately heavy infection in a beagle bitch which had a history of weakness of the hind quarters and lack of stamina. There was a partial atrophy of the back muscles and pain on palpation of the abdomen. Considerable improvement followed treatment with procaine penicillin and caricide, with irrigation of the bladder with 1:1,000 hexylresorcinol.

R.T.

**115—Military Surgeon.**

- a. LAWTON, A. H. & WIGHT, A. B., 1953.—“An endemic site of filarial elephantiasis in Nicaragua.” 112 (1), 40–43.

(115a) Fifteen cases of elephantiasis were found in a group of Jamaicans in the Department of Carrazo, Nicaragua, in 1945. Microfilariae could only be found with certainty in blood from one patient.

P.M.



## 116—Monatshefte für Tierheilkunde.

- a. ENIGK, K., 1953.—“Behandlung des Lungenwurmbefalles der Wiederkäuer durch Aërosole.” 5 (1), 14–22.

(116a) The inefficacy of the usual methods of treating lungworm disease in ruminants is mainly due to the difficulty of ensuring that the anthelmintic reaches all parts of the bronchi and bronchioles; sprays, intratracheal injections and nasal sounds have all been found wanting. Enigk now reports on his experiments with aerosols. The apparatus used, which is described and illustrated, was specially prepared for him and includes an air compressor, and five atomisers (in which aerosols are formed from the anthelmintic and compressed air) connected by rubber tubing to masks which fit snugly to the animals' faces. Two sheep could be treated simultaneously. In all, fourteen substances were tested and the most promising was a synthetic ascaridol (“Askaridol” Knoll) with 5% santonin administered over a period of from six to eight minutes in doses of from 0.6 to 2.4 c.c. This treatment was equally successful against *Dictyocaulus filaria*, *Protostrongylus rufescens* and *Muellerius capillaris*. Alcoholic solutions were found to be unsuitable for aerosol treatment. Enigk concludes that these initial experiments show the promise of aerosol treatment of lungworm disease. The disadvantages are: impossibility of exact dosage; length of time taken to administer aerosols; price of apparatus [that used by Enigk cost 500 DM i.e. roughly £46]. The possibility of mass treatment in a sealed shed is thought to be worthy of investigation. A.E.F.

## 117—Nature. London.

- a. MICHEL, J. F., 1953.—“Fog fever syndrome in parasitic bronchitis.” [Correspondence.] 171 (4360), 940.  
 b. SANDERSON, A. E., 1953.—“Maturation and probable gynogenesis in the liver fluke, *Fasciola hepatica* L.” 172 (4368), 110–112.  
 c. ONIONS, T. G., 1953.—“Giant larvae of the potato root eelworm, *Heterodera rostochiensis* Wollenweber.” [Correspondence.] 172 (4371), 249–250.  
 d. GOVAERT, J., 1953.—“Deoxyribonucleic acid content of the germinal vesicle of the ovocyte in *Fasciola hepatica*.” [Correspondence.] 172 (4372), 302–303.  
 e. MICHEL, J. F., 1953.—“Phenomenon of protection in infections of *Trichostrongylus retortaeformis*.” [Correspondence.] 172 (4372), 312.  
 f. MUNRO, W. R., 1953.—“Intersexuality in *Asellus aquaticus* L. parasitized by a larval acanthocephalan.” [Correspondence.] 172 (4372), 313.

(117a) Although pulmonary oedema and emphysema manifested by a clinical syndrome resembling “fog fever” are common features of dictyocauliasis in adult cattle, the number of worms present is very variable. There may be many immature worms or only a score or so of microscopic forms. The clinical syndrome was observed in calves after exposure for three weeks to exceptionally heavy natural infection. In experimentally infected calves, the syndrome appeared in some cases when the initial infection terminated spontaneously and in other cases some months after the infection had been eliminated, but it could not be produced in every case. It also appeared about 12 days after animals which had thrown off an initial infection were reinfected. As the syndrome appears when some kind of immune response might be expected, it is suggested that the condition, which resembles an allergy, may be related to this response. In some cases diagnosed by clinicians as “fog fever” a few lungworms were found. This suggests the possibility that “fog fever” cases are associated with lungworm infection. R.T.L.

(117b) Sanderson finds that the diploid chromosome number in *Fasciola hepatica* is 20. During the maturation of the egg the spindle is formed independently of the sperm penetrating and there is no evidence of the formation of a male pronucleus. In an addendum she draws attention to a paper by John [for abstract see No. 131a below] in which he states that the diploid number is 12. Disagreeing with this Sanderson points out the disadvantages of making counts on sectioned material, rather than on smear and squash preparations. S.W.

(117c) Four giant larvae together with a large number of normal sized larvae emerged from a single cyst of *Heterodera rostochiensis*. Two of the giant larvae were measured. Their lengths were  $817\mu$  and  $783\mu$ . The stylets measured  $33\mu$ . The two very large empty egg cases which were found measured  $152\mu \times 76\mu$  and  $121\mu \times 67\mu$ .  
R.T.L.

(117d) The nucleolus of the germinal vesicle in *Fasciola hepatica* is surrounded by nucleolar associated chromatin and a network of extremely thin Feulgen-positive filaments. Their homogeneous distribution permits quantitative valuations of the desoxyribonucleic acid content by Lison's histophotometrical method. Govaert shows that in the germinal vesicle of *Fasciola hepatica* desoxyribonucleic acid not only persists but remains quantitatively constant.  
R.T.L.

(117e) In addition to the mechanisms of self-cure and inhibition of larval development in the resistance of rabbits to *Trichostrongylus retortaeformis*, Michel shows that there is a third mechanism of resistance which prevents the establishment of infective larvae. Rabbits were infected with increasing doses of larvae three times weekly for three weeks; thereafter the doses remained unchanged. Although the animals were receiving each week the equivalent of a lethal dose, no effect on their health or live weight was discernible. At post-mortem examinations, it was found that the number of inhibited third-stage larvae rose for about eight weeks and then fell at a decreasing rate. This progressive diminution recalled that already described as a result of the administration of a single dose of larvae to a previously infected animal in which a large number of larvae had become established [for abstracts see Helm. Abs., 21, Nos. 120d, 120e]. Faecal egg counts also followed a similar course and had the same periodicity. It is concluded that the larvae administered after the 8th week failed to become established and that the subsequent course of the infection referred to the larvae previously administered. Michel suggests the term "protection" for this third type of resistance mechanism.  
R.T.L.

(117f) Of 80 specimens of *Asellus aquaticus* parasitized by a larval polymorphid, 30 were normal males, 13 normal females and 28 individuals showed various degrees of intersexuality. Over 90% of those parasitized were darker than normal. All the parasitized females and intersexes had immature oostegites. Although none of 3,500 unparasitized *Asellus* were intersexes, Munro does not suggest that intersexuality occurs only in parasitized individuals.  
R.T.L.

# **118—New Zealand Journal of Science and Technology. B. General Research Section.**

- a. BULL, P. C., 1953.—"Distribution of the nematode *Trichostrongylus retortaeformis* (Zeder, 1800) in the wild rabbit, *Oryctolagus cuniculus* (L.)." 34 (6), 449-456.

(118a) Bull gives tabulated data on the distribution of the *Trichostrongylus retortaeformis* population in the intestine of the wild rabbit in New Zealand. It has a right-skewed curve. Less than 3% of the population is normally located in the jejunum or ileum.  
R.T.L.

# **119—North Carolina Medical Journal.**

- a. COMBS, J. J. & WARD, F. K., 1953.—"A successful procedure for tapeworm. Report of a case." 14 (2), 79-80.

(119a) The expulsion of a complete *Taenia saginata* followed the administration of 8 gm. oleoresin of male fern through a Rehfuß tube extending 4 inches into the duodenum. This was preceded and followed by magnesium sulphate and warm water. An injection of atropine sulphate ( $\frac{1}{75}$  grain) was given before the passage of the tube.  
P.M.B.

# **120—Pakistan Journal of Health.**

- a. AUGUSTINE, D. L., 1953.—"Filariasis in tropical Asia." 2 (4), 263-272.



**121—Phytoma. Paris.**

- a. COUTIÈRE, G., 1953.—“Le nématode de la betterave.” **6** (45), 14-16.

(121a) Coutière gives a short popular account of the sugar-beet eelworm in France, its life-history, effects on the host plant and control by crop rotation. M.T.F.

**122—Phytopathology.**

- a. CLAYTON, E. E., 1953.—“Control of tobacco diseases through resistance.” **43** (5), 239-244.  
 b. RASKI, D. J., 1953.—“Methods of detecting and investigating plant parasitic nematodes.” **43** (5), 259-263.  
 c. McBETH, C. W. & BERGESON, G. B., 1953.—“Methods of assaying nematocides.” **43** (5), 264-267.  
 †d. BIRCHFIELD, W., 1953.—“Parasitic nematodes associated with diseased roots of sugarcane.” **43** (5), 289.  
 †e. DEAN, J. L. & STRUBLE, F. B., 1953.—“Resistance and susceptibility to root-knot nematodes in tomato and sweet potato.” **43** (5), 290.

(122a) Clayton discusses recent progress and setbacks in breeding tobacco plants resistant to diseases. Present plans call for the use of genetic transference of resistance to root-knot nematode from *Nicotiana megalosiphon* to *N. tabacum*. R.T.L.

(122b) Although the various species of plant-parasitic nematodes can be detected by laboratory examination of specimens and soil samples, there is no simple method whereby an adequate survey can be made of a state or a particular growing area. Soil fumigation with nematicides and changes in the normal mineral elements of plants may give indications of the presence or influence of nematodes. The use of host plants as test indicators is complex and sometimes inconclusive. The mass collection of unmounted nematodes in agricultural investigations is a simple and effective means of evaluating possible nematode influence. R.T.L.

(122c) As no single technique for evaluating nematicides will screen all effective from non-effective compounds, McBeth & Bergeson use four different procedures, viz., (i) water screen in which chemicals are tested in aqueous solution or emulsion against *Ditylenchus dipsaci* for basic or inherent toxicity; (ii) soil injection screen in which volatile materials are injected into sealed or open containers enclosing soil infested with root-knot nematode, the effectiveness being measured by an indicator plant, e.g. tomato; (iii) soil mix screen in which a solid carrier, e.g. talc, is impregnated with material which is relatively non-volatile, and thoroughly mixed with naturally infested soil, this is then potted and seeded with an indicator crop, e.g. tomato; (iv) those materials which warrant further study from economic and nematocidal points of view are tested in small replicated field plots. R.T.L.

(122d) The dwarfing of sugar-cane plants in Louisiana resulted apparently from an impaired root system in which the fine network of feeder roots was lacking and the small roots were blunt, coarse and brown, and it was associated with the presence in the soil of large numbers of *Tylenchorhynchus* and *Pratylenchus* of unidentified species. The disease was produced experimentally when suspensions of these nematodes were added to sugar-canes grown in steam-sterilized soil. R.T.L.

(122e) The root systems of *Lycopersicum peruvianum* and *L. peruvianum* hybrid were invaded by fewer larvae of *Meloidogyne incognita* than were those of Marglobe tomatoes. The larvae entering the more resistant roots produced extensive tissue necrosis within 48 hours and most of the larvae had died and disappeared two weeks after infection. None of the larvae developed to the second moult. Larvae entering the roots of resistant sweet-potato (Orlis, Oklahoma 46 and Oklahoma 29) produced necrosis several days later. No necrosis was observed in the roots of the susceptible Allgold variety. In all lines of resistant sweet-potatoes a few of the larvae developed into egg-laying adults but most of them died and disappeared before attaining maturity. R.T.L.

† Abstract of paper presented at the 1953 Annual Meeting of the Southern Division, American Phytopathological Society, New Orleans, February 9-11, 1953.

## 122—Phytopathology (cont.)

- †f. GRAHAM, T. W. & HOLDEMAN, Q. L., 1953.—“The sting nematode, *Belonolaimus gracilis*, on cotton and other crops in South Carolina.” 43 (5), 291.
- †g. HOLDEMAN, Q. L. & GRAHAM, T. W., 1953.—“Population trends of the sting nematode under different crops in greenhouse pot culture.” 43 (5), 291.
- †h. MARTIN, W. J., 1953.—“Reaction of the Deltapine 15 variety of cotton to different isolates of *Meloidogyne*.” 43 (5), 292.
- †i. NEWSOM, L. D. & MARTIN, W. J., 1953.—“Effects of soil fumigation on populations of parasitic nematodes, incidence of Fusarium wilt, and yield of cotton.” 43 (5), 292–293.
- †j. PERRY, V. G. & SWANK, Jr., G., 1953.—“Some celery seedbed diseases of central Florida and their control with certain chemicals.” 43 (5), 293.

(122f) The sting nematode, *Belonolaimus gracilis*, caused severe field damage to crops of cotton, maize, soya beans, cowpeas and strawberries in South Carolina in 1950–1953. The symptoms of retarded growth and decay of the roots did not differ from those of meadow nematode root rot and were reproduced in the green-house in cotton plants grown in inoculated autoclaved soil. The nematodes were found only in the soil, not inside the roots. Soil fumigation with ethylene dibromide and D-D mixture, at the rate of 4 and 20 gallons per acre respectively, restored normal crop growth. R.T.L.

(122g) In pots planted with maize, oats, wheat, barley, rye, alta fescue, cowpea, soybean, summer squash and cotton, the sting nematode, *Belonolaimus gracilis*, increased consistently during 60–75 days to high populations. On sweet-potato and velvet bean, the initial attack was so severe that populations dropped. Peanut, crimson clover, ladino clover, tomato bell pepper, cucumber, strawberry, ragweed, cocklebur, crowfoot grass, bermuda grass and crab grass increased or maintained the nematode populations but the build-up was inconsistent. With tobacco, watermelon and crotalaria, the nematodes consistently failed to increase and no larvae were observed. R.T.L.

(122h) Egg masses of isolates of *Meloidogyne* from 22 host plants in different parts of Louisiana were established on Rutgers tomato plants. Deltapine-15 cotton plants were interplanted with the infected Rutgers and were also grown in sterilized soil to which infective larvae of a given isolate were added. Of 40 different isolates used, 13 failed to develop or to cause root-knot on the cotton. Seven of them were *Meloidogyne incognita*, two were *M. incognita* var. *acrita* and one was *M. hapla*. These 13 isolates had been derived from tomato, okra, cucumber, gardenia, strawberry and hairy vetch but other isolates from tomato, okra, cucumber and hairy vetch multiplied rapidly and affected the cotton. R.T.L.

(122i) In cotton soils in Louisiana, soil fumigation strikingly increased yields where there were heavy infestations with *Fusarium vasinfectum* and species of *Meloidogyne*, *Pratylenchus*, *Tylenchorhynchus* and *Trichodorus*. When ethylene dibromide (85% at the rate of 2 gallons per acre) was applied in the rows four weeks before planting with the cotton variety Coker 100W, the number of wilt-affected plants was strikingly reduced, and their height and the yield of cotton increased. *Tylenchorhynchus* were significantly fewer in number in the soil in the treated as compared with the untreated plots but the other genera were not noticeably reduced. R.T.L.

(122j) The eelworm parasites most commonly present in celery seed-beds in central Florida were *Meloidogyne* and *Trichodorus*. In some beds, *Dolichodorus heterocephalus* and *Belonolaimus gracilis* were found. When methyl bromide or chlorobromopropene was used before planting, the eelworms, parasitic fungi and noxious weeds were almost eliminated and the survival and rate of growth of the celery seedlings were more than double that of the controls. Dichlorobutene, dibromobutene, D-D mixture, EDB and some other chemical gave good control of one or other but not of both eelworms and fungi. R.T.L.

† Abstract of paper presented at the 1953 Annual Meeting of the Southern Division, American Phytopathological Society, New Orleans, February 9–11, 1953.



**122—Phytopathology (cont.)**

- k. CHRISTIE, J. R., 1953.—“Ectoparasitic nematodes of plants.” **43** (6), 295-297.  
 ††l. CAIRNS, E. J., 1953.—“Moisture conditions and control by heat of the mushroom-spawn nematode, *Ditylenchus* sp.” **43** (7), 404-405.  
 ††m. CRITTENDEN, H. W., 1953.—“Effect of clean fallow in root knot development on soybeans.” **43** (7), 405.  
 ††n. DRECHSLER, C., 1953.—“Two new nematode-capturing fungi.” **43** (7), 405.  
 ††o. GOLDEN, A. M., 1953.—“A root-knot nematode attacking the crown, petiole, and leaf of African violet.” **43** (7), 406.

(122k) Christie directs attention to the soil-inhabiting nematodes which feed on the roots of plants and on their underground parts without penetrating the tissues. These little known external feeders are responsible for crop losses as great as those caused by the plant-parasitic forms yet their study has received little attention, probably because they attain their greatest importance in tropical and subtropical regions. As illustrations the four species most important in Florida are briefly annotated, viz., *Belonolaimus gracilis*, *Trichodorus* sp., *Dolichodorus heterocephalus* and *Xiphinema americanum*. R.T.L.

(122l) Cairns has studied the effects of environmental moisture on the thermal death responses of *Ditylenchus* sp. from mushroom spawn. He finds that the mode of lethal action and the degree of resistance to heat is determined by the humidity. At 40 C.-45° C. death results independently of length of exposure. Death of nematodes in the anabiotic state shows temperature-time gradients which vary with the moisture level and are at temperatures above those critical for active forms. The lower the moisture level, the wider the gradient and the higher the resistance. R.T.L.

(122m) In field experiments on a loamy sand in Delaware with soya beans, root-knot nematodes in the top six inches of soil were greatly reduced when the land was kept in clean fallow by cultivation once a fortnight from 1st May until time of planting. R.T.L.

(122n) Drechsler states that an unnamed species of *Arthrobotrys* with uniseptate, elongate, obovoid conidia in a single terminal cluster captures eelworms through contraction and closure of three-celled rings, similar to the predacious rings of *A. dactyloides*. He briefly describes an unnamed *Dactylella* species with spindle-shaped quadrisepate conidia, which captures eelworms by adhesion to elongated ellipsoidal cells containing numerous subspherical granules borne directly on the mycelial hyphae. R.T.L.

(122o) The ineffectiveness of measures for the control of root-knot nematodes of the *Meloidogyne arenaria* group, which are a major problem in growing the African violet, *Saint-paulia ionantha*, is due to the presence of the eelworms in the crowns, petioles and leaves as well as in the roots. Propagation by crown separation and leaf cuttings perpetuates the infection. R.T.L.

**123—Poultry Science.**

- a. KOUTZ, F. R., 1953.—“The effect of built-up litter on the parasite ova and oocysts of poultry. Second report.” **32** (2), 313-320.

(123a) Koutz continues his work on the effect of built-up litter on poultry parasites. In a series of controlled experiments with built-up litter of five different kinds and ages in ten pens, chickens reared on litter on which older hens had previously been kept were heavily parasitized with *Ascaridia galli*, *Heterakis gallinae* and *Capillaria retusa*. Many birds had between 100 and 150 ascarids and some even more, while others had less than ten. There was far less build-up of parasites in litter on which only young birds had been reared. In one experiment in which the pens were out of use for ten weeks during the coldest part of the winter many ova were evidently destroyed, as there were few parasites in the chickens reared on this litter. [For abstract of the earlier work see Helm Abs., **21**, No. 32a.] P.M.B.

†† Abstract of paper presented at 10th Annual Meeting of the Potomac Division, American Phytopathological Society, Beltsville, Md., February 19-20, 1953.

## 124—Practitioner.

- a. JOLLY, H., 1953.—“The treatment of threadworms.” 170 (1016), 196–197.

## 125—Proceedings of the Alumni Association, Malaya.

- a. HOEPLI, R., 1953.—“Histopathological aspects of human and animal infections with zooparasites.” 6 (1), 60–80.  
 b. SHANMUGARATNAM, K., 1953.—“Ascariasis with haemorrhagic pancreatitis—two cases.” 6 (1), 81–83.

(125a) The study of the histopathology of parasitic infections can contribute to a better understanding of the defence reactions of the host and the biological activities of the parasite. Hoepli considers the subject from the point of view of (i) the host, (ii) the parasite and (iii) tumour growth in relation to parasitic infections. Basically the tissue changes caused by zooparasites are the same as those produced by other pathogenic agents.

R.T.L.

## 126—Proceedings of the Helminthological Society of Washington.

- a. ELSEA, J. R., 1953.—“Observations on the morphology and biology of *Longibucca eptesici* n.sp. (Nematoda: Cylinthocorporidae) parasitic in the bat.” 20 (2), 65–76.  
 b. LOOS, C. A., 1953.—“*Meloidogyne brevicauda*, n.sp. a cause of root-knot of mature tea in Ceylon.” 20 (2), 83–91.  
 c. VEGORS, D. H. & PORTER, D. A., 1953.—“Experimental cross transmission of *Strongyloides papillosus* in ruminants.” 20 (2), 91–92.  
 d. PORTER, D. A., 1953.—“On the occurrence of tapeworms, *Moniezia expansa* and *Moniezia benedeni*, in cattle and sheep.” 20 (2), 93–94.  
 e. TARJAN, A. C., 1953.—“Pathogenicity of some plant-parasitic nematodes from Florida soils. III. Growth of Chinese waterchestnut, *Eleocharis dulcis* (Burm. f.) Henschel inoculated with *Dolichodorus heterocephalus* Cobb (Tylenchinae).” 20 (2), 94–96.  
 f. ALLEN, R. W. & KYLES, P. M., 1953.—“The occurrence of the fringed tapeworm, *Thysanosoma actinoides*, in the pronghorn antelope.” 20 (2), 96–97.  
 g. HARGIS, Jr., W. J., 1953.—“Monogenetic trematodes of Westhampton Lake fishes. III. Part 2. A discussion of host-specificity.” 20 (2), 98–104.  
 h. MANTER, H. W. & PRINCE, D. F., 1953.—“Some monogenetic trematodes of marine fishes from Fiji.” 20 (2), 105–112.  
 i. FISCHTHAL, J. H., 1953.—“*Hypocaryophyllaeus gilae* n.sp. (Cestoda: Caryophyllaeidae), from the Utah chub, *Gila straria*, in Wyoming.” 20 (2), 113–117.  
 j. KATES, K. C. & TURNER, J. H., 1953.—“A comparison of the pathogenicity and course of infection of two nematodes of sheep, *Nematodirus spathiger* and *Trichostrongylus colubriformis*, in pure and mixed infections.” 20 (2), 117–124.  
 k. HERLICH, H., 1953.—“On the migratory behavior of the larvae of *Neoascaris vitulorum* (Goeze, 1782) Travassos, 1927 in white mice.” 20 (2), 124–126.  
 l. PRICE, E. W., 1953.—“Harley Jones Van Cleave, 1886–1953.” [Obituary.] 20 (2), 129.  
 m. [TARJAN, A. C.], 1953.—[Errata.] 20 (2), 132.

(126a) *Longibucca eptesica* n.sp., a parasite of the bats *Eptesicus fuscus fuscus*, *Pipistrellus subflavus* and *Myotis lucifugus*, differs from *L. lasiura* in having six pairs of genital papillae. The tail of the male is not conical but has a slight terminal enlargement which distinguishes it from *L. vivipara* in which the tail is curved dorsally. *L. eptesica* causes a slight erosion of the gastric mucosa. Elsea has also re-examined *L. lasiura* from the type host and finds that there are two equal spicules. These are completely separated from the gubernaculum, not fused as originally reported by McIntosh & Chitwood in 1934.

R.T.L.

(126b) *Meloidogyne brevicauda* n.sp. which affects the tea plant, *Camellia sinensis*, of all ages in Ceylon is described and figured. The egg which measures  $108\mu$ – $133\mu \times 41.7\mu$ – $59.5\mu$  is larger than that of any other species of the genus. The larva has a bluntly rounded tail and its stylet is  $14.3\mu$ – $14.5\mu$  long. The female is 0.68mm.–1.86 mm. long and its stylet is  $22.1\mu$  long. The male has a subdigitate tail whereas that of other species is more conoid.

R.T.L.

(126c) Experimental data are presented from which it is apparent that although cross-transmission of *Strongyloides papillosus* from one domestic ruminant to another is possible,



calves are not as susceptible to *S. papillosus* from sheep, or lambs to *S. papillosus* from cattle as they are to those from their own species. Nevertheless, goats were readily infected with larvae from sheep and cattle. R.T.L.

(126d) Data on the occurrence of *Moniezia expansa* and *M. benedemi* in the U.S.A., supplied from 119 cattle and 25 sheep, show that while the former species is more common in sheep the latter is more common in cattle; both species may occur in either host. R.T.L.

(126e) The awl nematode, *Dolichodorus heterocephalus*, is believed to be an ectoparasite of the Chinese water chestnut, *Eleocharis dulcis*. Although the symptoms of decline shown by some water chestnut plantings may not be due entirely to these parasites, it is probable that if the eelworm population around the root reaches large numbers, serious damage may result. The root system of experimentally inoculated plants contained discoloured, sickly and somewhat reduced roots whereas control plants had whitish, fleshy feeding roots and larger root systems. The total plant weight and root weight of controls were significantly higher than those of inoculated plants. R.T.L.

(126f) *Thysanosoma actinioides* is recorded from two out of 15 *Antilocapra americana* killed in central New Mexico. The largest specimens were only 4 cm.-5 cm. in length and the detached segments were about half the size of those usually found in domestic sheep. R.T.L.

(126g) From a study of the host-parasite relationships of 24 species of Monogenea recovered from 110 fishes of three families taken from Westhampton Lake, Richmond, Va., it is concluded that most Monogenea exhibit host specificity to a fairly high degree. Additional knowledge of the ectoparasitic trematodes might throw light on the phylogeny and natural taxonomy of hosts and their parasites. [For abstract of part 1 of this work see Helm. Abs., 22, No. 33i.] R.T.L.

(126h) Four monogenetic trematodes are reported from marine fishes at Suva, Fiji. *Lethacotyle fijiensis* n.g., n.sp. from a "yellow jack" of the family Carangidae, is differentiated from *Protomicrocotyle* chiefly by the entire absence of all clamps. The new genus is placed in the subfamily Vallisiinae Price, 1943 as emended by Sproston, 1946. *Cemocotyle sagae* n.sp. from *Caranx* sp. differs from *C. carangis* in its spineless genital atrium, simple chitinous cirrus, the distribution of the vitellaria and in its much smaller size. *Lintaxine microcotyla* n.sp. from a "ribbon fish" has large clamps which are stalked, and numerous small clamps which are very minute. There are numerous small atrial spines. The egg has a filament at each end. *Pseudaxine indicana* is reported from mackerel (Scombridae) which is a new host and geographical record. R.T.L.

(126i) *Hypocaryophyllaeus gilae* n.sp. from *Gila straria* collected by Bangham in the upper Snake River drainage, Wyoming [for an account of this work see *Zoologica, N.Y.*, 1951, 36, 213-217] is differentiated from *H. paratarius* by the scolex which is uniform in shape with a terminal disc. The loculi are well defined. The cirrus is protrusible. The vitellaria are around as well as between the testes. The maximum longitudinal extent of the uterine coils is one half or less that of the testicular field. The eggs are large. R.T.L.

(126j) Sublethal doses of larvae of *Nematodirus spathiger* alone or with *Trichostrongylus colubriformis* were administered to parasite-free Shropshire lambs. The results confirmed the conclusions of previous observers that *T. colubriformis* is more pathogenic and more persistent than *N. spathiger*, and demonstrated that in mixed infections these two species have additive pathogenic effects. R.T.L.

(126k) When embryonated eggs of *Neoascaris vitulorum* were fed to white mice, the larval migration was tracheal as in *Ascaris lumbricoides* and *Parascaris equorum* infections. No larvae were recovered from the litters of four mice fed with eggs during pregnancy. R.T.L.

(126m) This note draws attention to a mistake which appeared in *Proc. Helm. Soc. Wash.*, 1953, Vol. 20, on pages 51 and 53. *Discomyctus brevicaudatus* is illustrated on p. 51 in figure 1 but the legend applies to *Longidorella parva*; this species is illustrated on p. 53 in figure 2, but the legend applies to *D. brevicaudatus*.

## 127—Proceedings of the Indian Science Congress.

- a. RAMALINGAM, K., 1953.—“An interesting new species of trematode from the gills of *Chorinemus lysan* (Forsk.).” [Abstract.] 40th (1953), Part III, p. 188.
- b. RAMALINGAM, K., 1953.—“A new genus of trematode parasites from the gills of *Sphyraena acutipinnis* Day.” [Abstract.] 40th (1953), Part III, p. 188.
- c. DAYAL, J. & GUPTA, S. P., 1953.—“A description of four new trematodes of the sub-family Haplorchiinae (Looss, 1899) Poche, 1926 with a discussion of the systematics of the sub-family.” [Abstract.] 40th (1953), Part III, pp. 188–189.
- d. DAYAL, J. & GUPTA, S. P., 1953.—“Two new trematode parasites of the family Opisthorchiidae Braun, 1901.” [Abstract.] 40th (1953), Part III, pp. 189–190.
- e. DAYAL, J. & GUPTA, S. P., 1953.—“A new trematode, *Brahamputrotrema punctati* n.g. n.sp., from a fresh-water fish, *Ophicephalus punctatus* (Bloch).” [Abstract.] 40th (1953), Part III, p. 190.
- f. DAYAL, J. & GUPTA, S. P., 1953.—“A new trematode, *Gauhatiinae batrachii* n.g., from the intestine of a fresh-water fish, *Clarias batrachus* (Linn.), of the sub-family Haplocladinae Odhner, 1911.” [Abstract.] 40th (1953), Part III, p. 190.
- g. DAYAL, J. & GUPTA, S. P., 1953.—“On a new trematode, *Oudhia horai* n.g., n.sp., of the sub-family Reniferinae Pratt, 1902 from the intestine of a fresh-water fish *Heteropneustes fossilis* (Bloch).” [Abstract.] 40th (1953), Part III, p. 191.
- h. HAWKINS, P. A., RAY, H. N. & MEHRA, K. N., 1953.—“*Semnopithecus entellus* (Himalayan langoor) as the new definitive host of *Dicrocoelium dendriticum* (Rudolphi, 1819).” [Abstract.] 40th (1953), Part III, p. 191.
- i. KHAMBATA, F. S. & BAL, D. V., 1953.—“Three new species of the genus *Otobothrium* (Cestoda) from marine fishes of Bombay.” [Abstract.] 40th (1953), Part III, p. 191.
- j. KHAMBATA, F. S. & BAL, D. V., 1953.—“Two new species of the genus *Discobothrium* (Cestoda) from the marine fishes of Bombay.” [Abstract.] 40th (1953), Part III, p. 192.
- k. JOHRI, L. N., 1953.—“A subcutaneous tumour caused by tapeworm larvae in *Columba livia* at Delhi.” [Abstract.] 40th (1953), Part III, p. 192.
- l. JOHRI, L. N., 1953.—“On the effect of hetrazan in the removal of *Ascaris lumbricoides* from the digestive tracts of young children.” [Abstract.] 40th (1953), Part III, p. 192.
- m. SARKAR, H. L., 1953.—“On a new acanthocephalan, *Pallisentis nandai*, sp.nov., from the fish, *Nandus nandus* (Ham.).” [Abstract.] 40th (1953), Part III, pp. 192–193.

(127a) A trematode from the gills of *Chorinemus lysan* at Madras is named *Vallisia chorinemata* n.sp. It is the first record of this genus in India. [No details are given.] R.T.L.

(127b) Among the trematodes collected from south Indian fishes, one belongs to the Gastrocotylinae and occurred on the gills of *Sphyraena acutipinnis*. It is named *Chauhannea madrasensis* n.g., n.sp. The presence of testes in front of and beside the ovary as well as behind it and an asymmetrical haptor are the chief features of interest. R.T.L.

(127c) Four new species of *Haplorchioides* are briefly described, *H. gomtioensis* n.sp. from *Silundia gangetica*, *H. brahamputraensis* n.sp. and *H. ritai* n.sp., both from *Rita rita* from the Brahmaputra, Gauhati, Assam, and *H. seenghali* from *Macrones seenghala*. *H. brahamputraensis* differs from *H. ritai* and other forms in having the genital pore outside the intestinal caeca and a receptaculum seminis smaller than the ovary. *H. seenghali* differs from *H. attenuatum* in the distribution of the vitelline glands, and from other species in the position and size of the receptaculum seminis and in the position of the genital pore on the left intestinal caecum. R.T.L.

(127d) *Thaparotrema vittalani* n.g., n.sp. from the gall-bladder of *Rita rita* in Assam, differs from known genera of the Opisthorchiinae as the vitelline glands extend in front of the ventral sucker and up to the hinder end of the anterior testis, and the excretory bladder is swollen at its anterior end. *Assamia gauhatiensis* n.g., n.sp. from the intestine of *Rita rita* closely resembles *Gomtiotrema* but is distinguishable by the position of the ventral sucker,



the position of the genital organs which lie in the middle third of the body behind the ventral sucker, and in the distribution of the vitelline glands. It differs from all other members of the family in the possession of a muscular oesophageal pouch from the dorsal side of which arise two identical caeca, in the distribution of the vitelline glands which are intercaecal and post-ovarian, in the shape of the excretory bladder, and in the position of the genital pore which lies between the oesophageal pouch and the ventral sucker surrounded by strong sphincter muscles forming a common genital atrium. R.T.L.

(127e) Four specimens of *Brahmaputrotrema punctati* n.g., n.sp. were collected from the intestine of *Ophicephalus punctatus* in Assam. It differs from known genera of the Monorchidae in the distribution of the vitelline glands which range from the middle of the pharynx up to the middle of the ovary, the absence of a muscular metraterm, and the presence of an unarmed cirrus and a tubular excretory bladder extending up to the hinder end of the ovary. R.T.L.

(127f) *Gauhatinae batrachii* n.g., n.sp. was collected in Assam from the intestine of *Clarias batrachus* (Linn.). It resembles *Proctoeces* but differs in the Y-shaped bladder, the position of the excretory pore on the dorsal side at the posterior end, the tubular seminal vesicle and pars prostatica of the cirrus sac, the muscular genital sinus in front of the ventral sucker, the large receptaculum seminis and the distribution of the vitelline glands. R.T.L.

(127g) *Oudhia horai* n.g., n.sp. was collected from a fresh-water fish, *Heteropneustes fossilis*, at Imphal, Manipur State. The new genus can be distinguished from *Neorenisfer* by the well developed receptaculum seminis and cirrus sac which extends to the posterior end of the ventral sucker. The ventral sucker is smaller than the oral sucker which is funnel-shaped. The vesicula seminalis is divided into two parts. R.T.L.

(127h) *Dicrocoelium dendriticum* has been found in the livers of three out of twelve *Semnopithecus entellus*. About 474 were collected from one monkey. R.T.L.

(127i) Three new tapeworms [not described in the abstract] are named *Otobothrium vermicularies* n.sp., *O. septemspinigerens* n.sp., and *O. conglobatus* n.sp. They were collected from different elasmobranchs at Bombay. R.T.L.

(127j) Two new species of the genus *Discobothrium* have been obtained at Bombay from *Trygon sephen*, *Rhychobatus djeddensis* and *Aetomylaeus maculatus*. They are named *D. quadrisurculi* n.sp. and *D. redacta* n.sp. but are not described in this abstract. R.T.L.

(127k) A coenurus was recovered from a tumour of the subcutaneous tissues of the abdomen of *Columba livia* at Delhi. Cysts and daughter cysts bore scolices without rostellar hooks. R.T.L.

(127l) On account of its low toxicity, hetrazan has been found to be a very useful drug for the elimination of *Ascaris lumbricoides* in children and infants. The worms became paralysed and when evacuated can survive for 50 to 70 hours under ordinary laboratory conditions. R.T.L.

(127m) *Pallisentis nandai* n.sp. from the fresh-water fish, *Nandus nandus*, differs from the three known species by its small size, the difference in the number of spines on the collar and body, the distinct sexual dimorphism shown in the circles of body spines of male and female, the length of the two lemnisci, the presence of body nuclei and the structure of the male genitalia. [Details are not given.] R.T.L.

## 128—Proceedings of the Pakistan Science Conference.

- a. ABDUSSALAM, M. & SARWAR, M. M., 1953.—“A new criterion for the differentiation of male schistosomes.” [Abstract.] 5th (1953), Medicine & Veterinary Science Section, pp. 10—11.
- b. ABDUSSALAM, M. & SARWAR, M. M., 1953.—“Occurrence of *Schistosoma nasalis* Rado in the Punjab.” [Abstract.] 5th (1953), Medicine & Veterinary Science Section, p. 11.
- c. ABDUSSALAM, M. & SARWAR, M. M., 1953.—“Occurrence of a schistosome in ducks in Pakistan.” [Abstract.] 5th (1953), Medicine & Veterinary Science Section, p. 11.
- d. SARWAR, M. M., 1953.—“Liver fluke (*Fasciola gigantica*) control in the Punjab.” [Abstract.] 5th (1953), Medicine & Veterinary Science Section, p. 12.
- e. SARWAR, M. M., 1953.—“Bionomics and geographical distribution of *Limnaea acuminata* in the Punjab.” [Abstract.] 5th (1953), Medicine & Veterinary Science Section, pp. 12—13.
- f. YAQUB, M., 1953.—“*Cysticercus bovis* in a bullock.” [Abstract.] 5th (1953), Medicine & Veterinary Science Section, p. 13.
- g. SARWAR, M. M., 1953.—“Coenurus cyst as a cause of recurrent tympanites in sheep.” [Abstract.] 5th (1953), Medicine & Veterinary Science Section, p. 13.
- h. SARWAR, M. M. & RAUF, A., 1953.—“Incidence and bionomics of *Dictyocaulus filaria* in the Punjab.” [Abstract.] 5th (1953), Medicine & Veterinary Science Section, pp. 13—14.
- i. SARWAR, M. M., 1953.—“Some hitherto unrecorded nematodes from domestic ruminants in Pakistan.” [Abstract.] 5th (1953), Medicine & Veterinary Science Section, p. 14.
- j. SARWAR, M. M., 1953.—“A new lungworm, *Pneumostrongylus ovis* n.sp. from sheep in Pakistan.” [Abstract.] 5th (1953), Medicine & Veterinary Science Section, p. 14.
- k. SARWAR, M. M., 1953.—“Distribution of *Protostrongylus* sp. and *Varestrongylus pneumonicus* lungworms of sheep and goats, in the Punjab and bionomics of their intermediate hosts.” [Abstract.] 5th (1953), Medicine & Veterinary Science Section, p. 15.
- l. RAUF, A., 1953.—“Toxic effect of sheep urine on first stage larvae of *Dictyocaulus filaria*.” [Abstract.] 5th (1953), Medicine & Veterinary Science Section, pp. 15—16.
- m. SARWAR, M. M., 1953.—“*Capillaria columbae* in pigeons in Pakistan.” [Abstract.] 5th (1953), Medicine & Veterinary Science Section, p. 16.

(128a) In their search for a reliable character for the differentiation of species Abdussalam & Sarwar found that in male schistosomes the variations in the body thickness from the ventral sucker to the tail are constant in a given species. Measurements of breadth taken at distances of 0.2 mm. gave a good idea of the variations when plotted on graph paper. The curve for a large number of individuals of the same species was constant and differed markedly from that for other species. The findings are based on mounted specimens of *Schistosoma spindalis*, *S. nasalis*, *S. indicum* and *Ornithobilharzia turkestanicum* and on published camera lucida drawings made by other workers. s.w.

(128b) *Schistosoma nasalis* has not been hitherto recorded in the Punjab in buffaloes and sheep with nasal growths of various kinds. It is now reported in 88 out of 180 apparently healthy buffaloes slaughtered in Lahore. s.w.

(128c) *Pseudobilharzia* eggs were obtained from scrapings of the caecal and intestinal mucosa of *Anas platyrhynchos* and *Nettion crecca* but no adult schistosomes were found. s.w.

(128d) For the control of fascioliasis, Sarwar recommends carbon tetrachloride at a dose rate of 5 c.c. for cattle and buffaloes and 1 c.c. for sheep and goats, given twice yearly. s.w.

(128f) The occurrence of *Cysticercus bovis* in a bullock killed at Lodhran is now recorded as this has not been included in previously published lists of helminth parasites for this area. s.w.

(128h) *Dictyocaulus filaria* infection is restricted to the winter months in the Punjab. The infection appears in November, reaches a peak in January and falls to a low level by March. In natural infections the worms lived from 65 to more than 113 days but in experimentally infected animals egg production continued throughout the year. Development of infective larvae took 14 days at 8°C.—13°C. and three days at 27°C. s.w.

(128i) The following are reported as new records for Pakistan: *Ostertagia grühneri* in a buffalo calf, *O. trifurcata*, *O. circumcincta*, *Trichostrongylus vitrinus* and *T. axei* in sheep, and *Marshallagia marshalli* in goats. *O. circumcincta* and *T. axei* also occurred in cattle. *Cooperia pectinata* and *C. punctata* were common in young sheep but not in adults. s.w.



(128j) *Pneumostongylus ovis* n.sp. which is described from sheep and goats at Murree differs from the other two species of the genus in shape and size of the spicules and the gubernaculum. S.W.

(128k) *Protostrongylus* infection occurs in the region of low hills and table-lands with bushy vegetation; *Helicella* sp. acts as the intermediate host. *Varestrongylus pneumonicus* infection is confined to the Murree hills where *Macrochlamys cassida* acts as intermediary. In the regions where the lungworms occur almost all the sheep and goats are infected. S.W.

(128l) First-stage larvae of *Dictyocaulus filaria* in fresh undiluted urine survived 33 hours but not 35; in 75% and 50% concentrations they survived 40 but not 48 hours; in 25% they survived 48 hours but not 60. In a mixture of faeces and urine they survived 6 hours but not 10. S.W.

(128m) *Capillaria columbae* is reported to be common in pigeons in Pakistan and ova of *Capillaria* sp. were collected from ducks. S.W.

### 129—Public Health Reports. Washington.

- †a. LINK, V. B., 1953.—“A health and economic problem.” 68 (4), 417-418.
- †b. STEELE, J. H., 1953.—“Garbage-borne swine diseases.” 68 (4), 418.
- †c. SCHWARTZ, B., 1953.—“Trichinae in swine.” 68 (4), 418.
- †d. GOULD, S. E., 1953.—“Prevalence and prevention.” 68 (4), 419.
- †e. MILLER, A. R., 1953.—“Federal meat inspection.” 68 (4), 419.
- †f. AUGUSTINE, D. L., 1953.—“Low-temperature treatment.” 68 (4), 419.
- †g. GOMBERG, H. J. & GOULD, S. E., 1953.—“Effect of ionizing radiation.” 68 (4), 419-420.
- †h. SUSSMAN, O., 1953.—“State problems in control.” 68 (4), 420.
- i. HALDEMAN, J. C., STEELE, J. H. & VAN DERWERKER, R. J., 1953.—“Trichinosis control and vesicular exanthema.” 68 (4), 421-424.

(129f) Recent studies indicate that pork is rendered safe against trichinosis by rapid lowering of the temperature (i) to  $-35^{\circ}\text{C}.$ , or (ii) to  $-18^{\circ}\text{C}.$  followed by storage at this temperature for three days. P.M.B.

(129g) As about 10,000 roentgens of cobalt-60 gamma rays will sterilize all female *Trichinella* larvae in rat muscle, it is believed that this method of *Trichinella* control could be applied to pig carcasses. P.M.B.

(129i) The recent outbreaks of vesicular exanthema in pigs throughout the U.S.A. resulting from feeding on untreated garbage, has drawn attention to this practice which is the principal factor in the spread of trichinosis in America. P.M.B.

### 130—Publicaciones del Instituto de Biología Aplicada. Barcelona.

- a. GADEA, E., 1953.—“Nota sobre algunos nematodos muscícolas de Tagsut (Marruecos español).” 12, 123-128. [English summary p. 128.]

(130a) Gadea records seven species of moss-inhabiting nematodes from the vicinity of Tagsut (about 1,000 metres above sea level) in Spanish Morocco. *Teratocephalus crassidens* is the only species not previously recorded in Africa. P.M.B.

### 131—Quarterly Journal of Microscopical Science.

- a. JOHN, B., 1953.—“The behaviour of the nucleus during spermatogenesis in *Fasciola hepatica*.” 94 (1), 41-55.

(131a) John describes and illustrates in detail the behaviour of the nuclei in the male germ cells in *Fasciola hepatica* during all stages of spermatogenesis. He records the occurrence

† Abstract of paper presented at 1st National Conference on Trichinosis, Chicago, December 15, 1952.

of globules, of which he was unable to determine the origin, composition or function, in the peripheral border of the testes and notes that similar structures were described by Ding in *Dicrocoelium lanceatum* [*dendriticum*]. The diploid chromosome number appears to be 12. Chiasmata show a normal distribution.

### 132—Quarterly Review of Biology.

- a. BIRCH, L. C. & CLARK, D. P., 1953.—“Forest soil as an ecological community, with special reference to the fauna.” 28 (1), 13–36.

(132a) In this study of organisms associated with the decomposition of plant litter in forest soils, it is pointed out that the feeding habits of free-living soil nematodes have been the subject of a good deal of confusion and contradiction. In Overgaard's opinion [for abstract see Helm. Abs., 18, Nos. 101a, 127b] there is little evidence for the assumption that many of the soil nematodes feed directly on humus.

R.T.J.

### 133—Recueil de Médecine Vétérinaire.

- a. PRIOUZEAU, M. T., PRIOUZEAU, M., THIERY, G. & DRIEUX, H., 1953.—“Hydatid polypapillaire du feuillet des bovidés.” 129 (1), 26–33.  
b. SANTUCCI, J., HAAG, J. & SENDRAL, R., 1953.—“A propos d'un cas de filariose canine.” 129 (3), 155–156.

(133a) Priouzeau *et al.* give a histopathological description, illustrated by photomicrographs, of a “polypapillaire” hydatid cyst weighing 1 kg. from the wall of the third stomach of a bullock. Reference is made to two later similar cases which were also examined at the laboratory of pathological anatomy at Alfort.

P.M.B.

### 134—Research Bulletin of the Hokkaido National Agricultural Experiment Station.

- a. ICHINOHE, M., 1953.—[On the parasitism of the soy bean nematode, *Heterodera glycines*. No. 64, pp. 113–124. [In Japanese: English summary pp. 122–124.]

(134a) Ichinohe tested 15 leguminous and 17 other plants for susceptibility to *Heterodera glycines*, the soya bean nematode. Abundant cysts were formed on soya bean (*Glycine max*) and azuki bean (*Phaseolus angularis*), a few on kidney bean (*P. vulgaris*), and very rarely on runner bean (*P. coccineus*). On kidney bean the cysts were small and hardly protruded through the root cortex. Runner bean roots were heavily invaded, as were many of the other legumes tested, and it is suggested that they may have possibilities for trap-cropping. No differences were observed in the rate of development of the larvae in soya bean, azuki bean and kidney bean.

M.T.F.

### 135—Revista de la Academia Colombiana de Ciencias Exactas, Físicas y Naturales.

- a. AGUILÓ, F. DE S., 1953.—“Una nueva helmintiasis humana en Colombia: la fascioliasis hepática.” 9 (33/34), 133–134.

(135a) This brief account refers to the work of Muñoz Rivas on fascioliasis in Colombia and to the presentation of a film on the subject.

P.M.B.

### 136—Revista Ibérica de Parasitología.

- a. GONZÁLEZ CASTRO, J. & MAÑAS MONTALVO, J., 1953.—“Helmintiasis intestinales en poliomyelitis. Estudio de 24 casos.” 13 (1), 3–77. [English summary pp. 73–75.]  
b. LÓPEZ-NEYRA, C. R., 1953.—“Las thelaziosis oculares humanas, con un primer caso observado en España.” 13 (1), 79–97.

(136a) From a study of the helminth infections present in 24 cases of poliomyelitis treated at Granada, González Castro and Mañas Montalvo suggest that there may be a relationship between the two conditions, in so far as the damage caused by intestinal nematodes may



render easier the passage of the virus through the intestinal wall. Attention is drawn to the finding of an ascaris larva in the brain of one case.

P.M.B.

(136b) López-Neyra is of the opinion that the species involved in European cases diagnosed as *Filaria oculi* should be referred to *Thelazia*; the species is undefinable, but lies between *T. rhodesii* and *T. lacrymalis*, probably more closely resembling the former. The pathogenic effect, anatomical localization and the worms and larvae themselves are comparable with *T. rhodesii* found in bovines and very different from *Setaria* and *Loa*. He is also of the opinion that the specimen recorded by del Toro in 1878 from the eye of a woman in Cadiz, and named *Dracunculus oculi* or *Filaria lentis*, was in fact a *Thelazia* and should be considered as the first case in man in Spain.

P.M.B.

### 137—Revue Verviétoise d'Histoire Naturelle.

- a. JACQUES, J., 1953.—“De quelques vers parasites de l'homme.” 10 (1/2), 3-5.

### 138—Rhodesian Farmer.

- a. MÖNNIG, H. O., 1953.—“Prevention and cure of ascaris worms.” June 10, pp. 20-21.

### 139—Rivista di Parassitologia.

- a. RICCI, M., 1953.—“Ricerche parassitologiche nell'isola d'Ischia. IV.—Note sul parassitismo intestinale nella popolazione adulta.” 14 (2), 85-88. [English summary p. 88.]

(139a) The helminth infection rates of 81 adults on Ischia Island, in the Gulf of Naples, were: *Ascaris lumbricoides* 18.52%, *Necator americanus* 1.23%, *Trichuris trichiura* 70.84%. R.T.L.

### 140—Schweizer Archiv für Tierheilkunde.

- a. MASKAR, U., 1953.—“Über die experimentell erzeugte Entwicklung des Hundebandwurmes (*Mesocestoides lineatus*) aus den Dithyridien von Huhn und Igel.” 95 (3), 188-193. [English, French & Italian summaries p. 193.]

(140a) Proglottides of *Mesocestoides lineatus* were found in the faeces of dogs not less than 50 days after experimental feeding with dithyridia from hens and a hedgehog. It is concluded that the dithyridia represent the larval form of this cestode.

P.M.B.

### 141—Science. Lancaster, Pa.

- a. ROWAN, W. B., 1953.—“A snail intermediate host of the rabbit parasite *Hasstilesia tricolor* (Trematoda: Brachylaemidae).” 117 (3047), 559-560.  
b. NAJARIAN, H. H., 1953.—“The life history of *Echinoparyphium flexum* (Linton 1892) (Dietz 1910) (Trematoda: Echinostomidae).” 117 (3047), 564-565.

(141a) Around Ithaca, wild rabbits may be infected with as many as 15,000 *Hasstilesia tricolor*. The intermediate host is now shown to be a small land snail, provisionally identified as *Vertigo ventricosa* form *elator* Sterki; 31 out of 42 specimens were found infected with motile, branched sporocysts containing spinous, unencysted brachylaemid metacercariae. Rabbits were fed for four days with infected snails. Ten days after the last feed, numerous partially grown *H. tricolor* were found at post-mortem.

R.T.L.

(141b) The natural definitive host of *Echinoparyphium flexum* in the Ann Arbor area is *Anas discors*. Its natural molluscan vector is *Limnaea palustris*, in 1.6% to 2.4% of which cercariae were present between April and October. The metacercariae were found encysted in the kidneys of frogs and tadpoles and in the kidney and heart of *L. palustris*. Young adult *Rana pipiens* and *R. sylvatica* could not be infected in the laboratory but their tadpoles were

very susceptible. The metacercariae found in adult frogs in nature evidently resulted from infection during the tadpole stage. In the laboratory, the cercariae encysted in *Gyraulus parvus* and *Physa gyrina* as well as in *L. palustris*. Only 1.1% to 1.6% of the metacercariae fed to chicks became adult. In *Echinoparyphium*, the two epidermal plates of the fourth tier in the miracidium are lateral whereas in *Echinostoma* they are dorso-ventral. The mother rediae develop from sporocysts in the mollusc's heart and migrate to the digestive gland and ovotestis where large numbers of daughter rediae are produced. These produce cercariae which enter the lung cavity and emerge by the respiratory aperture.

R.T.I

#### 142—South African Medical Journal.

- a. ELSDON-DEW, R., 1953.—“*Heterodera* in man.” 27 (7), 140-141.
- b. DE MEILLON, B., STOFFBERG, N. & LURIE, H. I., 1953.—“Urinary bilharziasis in the Witwatersrand.” 27 (13), 257-258.
- c. LURIE, H. I., DE MEILLON, B., STOFFBERG, N. & EISELEN, H. H., 1953.—“Negative cercarial antigen skin tests in proved urinary bilharziasis in children.” 27 (15), 295-296.

(142a) Elsdon-Dew reports numerous instances of the occurrence of *Heterodera* ovi in the faeces of patients in a hospital. At various stages of their development they superficially resembled one or other of the eggs of helminths parasitic in man.

R.T.I

(142b) The incidence of urinary schistosomiasis in schoolchildren aged 10 to 16 years in the northern environs of Johannesburg was shown by single urine specimens to be about 10% in Europeans and 20% in Bantus. The source of infection appears to be the Klein Jukskei River where *Physopsis* are common; at times as many as 40% were found shedding schistosome cercariae. Although these snails were shown to be susceptible to *Schistosoma haematobium* in the laboratory, animals experimentally infected from them have so far only produced worms believed to be *S. bovis*. Only one case of pure *S. bovis* infection was found in the children examined.

P.M.B

(142c) Intradermal tests with cercarial antigen were positive in only three out of 27 Bantu children aged between 9 and 16 years, all of whom had *Schistosoma haematobium* eggs in the urine and were positive to complement fixation tests. As the same antigen gave 100% positive results in infected adults it is concluded that skin sensitization is related to the duration of infection and possibly to the age of the patient.

P.M.B

#### 143—Station Technical Bulletin. Oregon Agricultural Experiment Station.

- a. SULLIVAN, J. F. & SHAW, J. N., 1953.—“Incidence and effect of lungworm in Oregon swine.” No. 28, 11 pp.

(143a) An examination of 518 pigs slaughtered in Oregon showed that 51.9% were infected with lungworm. While heavy experimental infections were lethal, no significant difference was observed when the carcasses of infected and uninfected animals were compared.

R.T.I

#### 144—Tabacco. Rome.

- a. MARCELLI, E., 1953.—“Disinfestazione di terreni infestati da *Heterodera marioni* (Cornu) Goodey a mezzo di D-D (dicloropropano e dicloropropene).” 57 (642), 25-29.

(144a) D-D mixture was applied at the rate of 300 kg. per ha. to a depth of 15 cm. at intervals of 30 cm. on a field where tobacco was severely attacked by root-knot nematodes. The yield was much improved and the degree of galling of the roots considerably reduced.

M.T.F



**145—Tijdschrift voor Diergeneeskunde.**

- a. FRICKERS, J., 1953.—“*Strongyloides bij het varken.*” 78 (7), 279–303. [English, French & German summaries pp. 293–298.]

(145a) In pigs in Surinam, the period between infection with *Strongyloides ransomi* and the occurrence of eggs in the faeces is only three days. This suggests that the strongyliiform larvae entering by the mouth do not always migrate through the lungs. In the early days of infection there is a neutrophilia, a shift to the left and an eosinopenia. In the sucking pig moderate infections may cause enteritis which contributes to the severity of the insufficient haemoglobin synthesis due to the low intake and impaired absorption. In fatal cases the neutrophilia and shift to the left remain, the eosinophils disappear, the lymphocytes decrease and degenerative changes of the cells become visible. The most severe symptoms and the highest mortality occur in the 3rd to 6th week. The intake of solid food is marked by the onset of recovery. In adult pigs the stable haemoglobin synthesis cannot be broken down by *S. ransomi* infection, except during pregnancy. In Surinam hygienic measures combined with a diet with adequate haemoglobin nutrients provided a successful treatment. R.T.L.

**146—Tijdschrift over Plantenziekten.**

- a. OOSTENBRINK, M. & OUDEN, H. DEN, 1953.—“Het koolcystenaaltje, *Heterodera cruciferae* Franklin, 1945, in Nederland.” 59 (3), 95–100. [English summary p. 100.]  
 b. LAAN, P. A. VAN DER, 1953.—“Een schimmel als parasiet van de cyste-inhoud van het aardappelcystenaaltje (*Heterodera rostochiensis* Wollenw.).” 59 (3), 101–103. [English summary p. 103.]  
 c. LAAN, P. A. VAN DER, 1953.—“De oorsprong van het aardappelcystenaaltje (*Heterodera rostochiensis* Wollenw.).” 59 (3), 103.

(146a) *Heterodera cruciferae*, which is characterized by small, red-brown, roundish lemon-shaped cysts and short, thick larvae, has been observed in the Netherlands in north Friesland, the Bommelerwaard, North Holland, north Groningen (Zuidwolde, Bedum) and Limburg. It occurred on cabbage, rape and rape seed but did not attack beet. The population density and type of damage in rape seemed similar to that caused by *H. schachtii* in sugar-beet. In the most important areas of cabbage cultivation it was a less important factor than *H. schachtii*. R.T.L.

(146b) On sandy soil in Holland *Heterodera rostochiensis* cysts show black spots consisting of pycnidia of a fungus [not identified] which probably belongs to the genus *Phoma* or *Pyrenochaeta*. The fungus is visible inside the cysts entwining and mummifying the eggs. Fewer larvae hatch from the infected cysts. R.T.L.

(146c) The occurrence of *Heterodera rostochiensis* was first recorded in eastern Germany in 1913, in England in 1917, in the Netherlands in 1941 and in the Peruvian Andes in 1952. P.M.B.

**147—Transactions of the American Microscopical Society.**

- a. HUNTER, W. S. & VERNBERG, W. B., 1953.—“Early stages in the life cycle of the trematode, *Gynaecotyla adunca* (Linton, 1905).” 72 (2), 163–170.  
 b. WILLIAMS, R. W., 1953.—“Helminths of the snapping turtle, *Chelydra serpentina*, from Oklahoma, including the first report and description of the male of *Capillaria serpentina* Harwood, 1932.” 72 (2), 175–178.  
 c. JASKOSKI, B. J. & EGAN, T. P., 1953.—“Age resistance of swine ascarid eggs.” 72 (2), 179–184.  
 d. MATHEWS, W. W., 1953.—“The use of hollow-cone illumination for increasing image contrast in microscopy.” 72 (2), 190–195.  
 e. SCHELL, S. C., 1953.—“Four species of *Microtetrameres* (Nematoda: Spiruroidae) from North American birds.” 72 (3), 227–236.

(147a) The life-history of *Gynaecotyla adunca* has been followed experimentally in *Nassarius obsoleta*. The miracidia hatched apparently only after being eaten by the molluscan

intermediary. There was one generation of small oval daughter sporocysts which produced tailless, stylet-bearing cercariae. The cercariae encysted in the fiddler crab, *Uca pugilator*. Natural infections with metacercariae were found in *U. pugilator* (89%), *U. pugnax* (46%), *U. minax* and in the amphipod *Talorchestia megalophthalmia* (3.5%). It is suggested that the cercariae of the Ubiquita type figured by Rankin as encysting in *Talorchestia* were not, as assumed, those of *Gynaecotyla nassicola*. As the smaller body size and the more marked lobulation of the intestinal crura described by him for *G. nassicola* are variable characters, this species is reduced to synonymy with *G. adunca*. R.T.L.

(147b) The helminths found in 30 specimens of the snapping turtle, *Chelydra serpentina*, in eastern and central Oklahoma were eight species of trematodes, six of nematodes and one acanthocephalan. Juvenile strigeids of the *Neascus* type, immature *Neoechinorhynchus emydis* and *Neopolystoma orbiculare* are recorded in *C. serpentina* for the first time. *Auridistomum chelydrae* is redescribed. The male of *Capillaria serpentina* is now described and figured. R.T.L.

(147c) [An authors' abstract of this paper has already appeared in *J. Parasit.*, 1952, 38, Suppl. pp. 34-35. For abstract see *Helm. Abs.*, 21, No. 230cw.]

(147e) *Microtetrameres bubo* n.sp. from *Bubo virginianus*, *M. aquila* n.sp. from *Aquila chrysaetos*, *M. accipiter* n.sp. from *Accipiter gentilis*, and *M. corax* from *Corvus corax* are described and figured. The first two species are differentiated from one another and the last two species are stated to be very different from *M. inermis* [but none of them are differentiated from other known species of the genus]. When eggs of *M. corax* were fed to *Blattella germanica*, infective third-stage larvae developed but attempts to infect day-old chicks failed. R.T.L.

#### 148—Transactions of the Royal Society of Tropical Medicine and Hygiene.

- a. GELFAND, M. & ROSS, W. F., 1953.—"I. The distribution of schistosome ova in the alimentary tract in subjects of bilharziasis." 47 (3), 215-217.
- b. GELFAND, M. & ROSS, W. F., 1953.—"II. The distribution of schistosome ova in the genito-urinary tract in subjects of bilharziasis." 47 (3), 218-220.
- c. ABBOTT, P. H. & SPENCER, H., 1953.—"Transverse myelitis due to ova of *Schistosoma mansoni*." 47 (3), 221-223.

(148a) Digestion of liver, gall-bladder, pancreas, stomach, small intestine, caecum, appendix, ascending, transverse and descending colon, rectum, suprarenals, mesenteric glands, spleen and bladder from 110 autopsies on natives of South Central Africa revealed eggs of *Schistosoma haematobium* and *S. mansoni* in all these organs. *S. haematobium* eggs were more common than those of *S. mansoni* in the liver. The results are tabulated. This diffuse and widespread distribution of the eggs reveals the difficulty of associating symptomatology with involvement of a single organ or viscus. R.T.L.

(148b) The incidence of schistosome eggs in the various genito-urinary organs of 110 Africans, as revealed by digestion in 10% caustic potash for 24 hours at 37°C., is tabulated. *Schistosoma mansoni* eggs were present relatively infrequently; those of *S. haematobium* were predominantly present. Under certain conditions local damage to the female genital tract may produce a clinical syndrome of salpingitis, cervicitis or oophoritis. R.T.L.

(148c) The literature of schistosomiasis of the spinal cord is summarized and the history is given of the clinical symptoms, laboratory findings and results of autopsy in a negro from the western Sudan. Sections of the spinal cord showed numerous granulomatous lesions containing living and dead *Schistosoma mansoni* eggs. In a second case with spastic paraplegia and *S. mansoni* eggs in the faeces, marked improvement followed treatment with tartar emetic. R.T.L.



## 148—Transactions of the Royal Society of Tropical Medicine and Hygiene (cont.)

- d. ABDOU, A. H., 1953.—“Life cycle of *Davainea proglottina*.” [Demonstration.] 47 (4), 261–262.
- e. BISSERU, B., 1953.—“Some stages in the development of larval echinostomes recovered from molluscs acting as carriers of schistosomes in Central Africa.” [Demonstration.] 47 (4), 262–263.
- f. GHARIB, H. M., 1953.—“Skin penetration and migration via the lymphatics of experimental animals by infective larvae of *Nippostrongylus muris*.” [Demonstration.] 47 (4), 264.
- g. LEROUX, P. L., 1953.—“Specimens from a fatal case of experimental schistosomiasis haematobia in a white mouse.” [Demonstration.] 47 (4), 264.
- h. LEROUX, P. L., 1953.—“The re-union of the intestinal caeca in the males of *Schistosoma mansoni*.” [Demonstration.] 47 (4), 264–265.
- i. LEROUX, P. L., 1953.—“Cellular infiltration of the periportal tracts in the liver of a mouse found to harbour only males of *Schistosoma mansoni*.” [Demonstration.] 47 (4), 265.
- j. LE ROUX, P. L., 1953.—“Metacercarial infection responsible for heavy mortality amongst fresh water molluscs, intermediaries of mammalian schistosomes, in aquaria.” [Demonstration.] 47 (4), 265.
- k. KERSHAW, W. E. & KERSHAW, M. A. C., 1953.—“The removal of an adult *Loa loa* from the margin of a resolving Calabar swelling.” [Demonstration.] 47 (4), 269–270.
- l. GRIFFITHS, R. B. & GORDON, R. M., 1953.—“The results of exposure of mammalian stratum corneum to moderate and to massive invasions by the cercariae of *Schistosoma mansoni*.” [Demonstration.] 47 (4), 270.

(148d) As intermediate hosts for *Davainea proglottina*, *Agriolimax reticulatus* is recorded for the first time and *Arion hortensis* for the first time in Britain. Adult *D. proglottina* were recovered 14 days after feeding a chicken with the cysticercoids. R.T.L.

(148e) *Physopsis africana* from Jadotville, Belgian Congo and *Planorbis tanganykanus* from Albertville contained metacercariae of *Echinoparyphium recurvatum* and *Echinostoma revolutum*. In the laboratory the cercariae of *Echinoparyphium recurvatum* encysted in *Limnaea auricularia* var. *rufescens* and *Indoplanorbis exustus* from India, *Planorbis* sp. from Kenya and *P. dufouri* from Portugal. These are new intermediate hosts. *Bulinus truncatus* from Sardinia were experimentally infected with *E. recurvatum* and the cercariae after being discharged encysted in the same molluscs. Adult *E. recurvatum* were recovered from laboratory rats 11 to 15 days after infection and mature adults of *Echinostoma revolutum* were found in rats about two weeks after infection. R.T.L.

(148h) In nine out of 37 male *Schistosoma mansoni* from an experimentally infected mouse, the caeca reunited more posteriorly than usual: in one instance they rejoined at the junction of the anterior and middle thirds of the body, in two equatorially and in the rest post-equatorially. R.T.L.

(148j) Heavy mortality in young laboratory-bred *Physopsis africana* was caused by echinostomatid metacercariae. It is suggested that biological control of these snails in collections of water near human habitations might be effected by the keeping of ducks which are infected with echinostomatids. It was observed, however, that although the younger specimens of various fresh-water molluscs suffered some of the older specimens, although heavily infected, continued to breed. R.T.L.

(148k) When an adult *Loa loa* was removed from a resolving Calabar swelling, the swelling disappeared on the following day. It is concluded that in this instance at least there was a direct association of the worm with the swelling. R.T.L.

(148l) When mice are submitted to moderate skin infection by *Schistosoma mansoni* cercariae, the cercariae create “penetration tunnels” in the stratum corneum. In massive exposures they become markedly gregarious and extensive penetration tunnels are produced each containing several cercariae. The continuity of the stratum corneum with that of the adjoining unaffected skin shows no obvious break, although the stratified layer is separated

**148—Transactions of the Royal Society of Tropical Medicine and Hygiene (cont.)**

- m. ALVES, W., 1953.—"Urinary bilharziasis in an ox in Southern Rhodesia." [Demonstration.] 47 (4), 272.
- n. ALVES, W., 1953.—"Experimental cercarial dermatitis in man due to cercariae of *Schistosoma matthei*." [Demonstration.] 47 (4), 272.
- o. STANDEN, O. D., 1953.—"The penetration of the cercariae of *Schistosoma mansoni* into skin and lymphatics of the mouse." 47 (4), 292-298.
- p. ALVES, W. & BLAIR, D. M., 1953.—"An experiment in the control of malaria as bilharziasis." 47 (4), 299-308.
- q. YOUNG, M. D., 1953.—"Microfilariae and trypanosomes found in a blood survey of Liberia." 47 (4), 346-349.

from the underlying Malpighian layer. Whereas it has previously been observed that moderate infections the anterior cephalic glands were almost completely emptied, these glands under conditions of massive exposure, sometimes retain their contents.

R.T.

(148m) Alves has obtained incontrovertible evidence that *Schistosoma bovis* can invade the urinary bladder in cattle. A case from Southern Rhodesia is cited, showing several lesions of the bladder wall of an ox, with numbers of schistosome ova in scrapings of the mucosa. It appears that *S. matthei* is also capable of invading the urinary tract.

R.T.I

(148n) Cercarial dermatitis was experimentally produced on the arm of a European 24 hours after exposure to cercariae of *Schistosoma matthei*.

R.T.I

(148o) Standen gives a detailed account of the passage of the cercariae of *Schistosoma mansoni* through the dermal and hypodermal tissues and into the lymphatics of experimentally infected mice. The penetration is effected by a combination of lytic outpourings and mechanical movements adapted to the tissues encountered. The cercariae enter between the hair follicles but may penetrate the bases of the follicles if these are in the cercarial path. The tail may be taken into the hypodermal tissue before becoming detached. The cercariae cannot pierce the deep fascia covering the muscle and wander horizontally in the hypodermal tissue. When a lymphatic is reached, it is penetrated and the cercariae thus gain entry to the venous system. The paper is illustrated by 24 photomicrographs.

R.T.L

(148p) In Southern Rhodesia there are two well defined seasons, a rainy period when malaria is dominant and a dry period when schistosome control is best undertaken. This provided the basis of a dual-purpose control unit employed throughout the year. Details are given of staff, equipment, chemicals used and methods of application.

R.T.L

(148q) In a survey to determine the prevalence of malaria in Liberia, over 10,000 blood smears were made in 18 different localities. Of the 1,244 smears which were taken at night, 4.3% were positive for microfilariae identified as those of *Wuchereria bancrofti*. The results are tabulated under areas and towns. The heaviest foci were noted in the coastal areas. At Robertsport 23.9% of 155 adults had nocturnal microfilariae.

R.T.L

**149—Tropical Agriculture. Trinidad.**

- a. MARTYN, E. B., 1953.—"Red ring disease of coconuts in Trinidad and Tobago." 30 (1/3), 43-53.
- b. VAUGHAN, A. W., 1953.—"Preliminary survey of internal parasites of animals in St. Kitts, B.W.I." 30 (1/3), 60.

(149a) The symptoms of red ring disease of coconuts are shown to be associated with the production of a strongly reducing substance in the periphery of the cortex of young palms invaded by *Aphelenchoides cocophilus*. The normal means of entry is by penetration through the leaf axils. It is shown that the coconut weevil, *Rhynchophorus palmarum*, is able to transmit



the infection. When burrowing in the cortex of diseased palms, the weevil's legs and body become covered with infected debris which is then transferred to wounds or leaf axils of adjacent palms. Control is possible by removing all infected palms and by destroying diseased tissues by fire.

R.T.L.

(149b) This preliminary list of helminths of domestic animals in St. Kitts is based on post-mortem examinations and faecal samples. The species identified number seven in dog, four in horse, six in sheep and goat, three in pig, five in cattle and two in poultry. [None are new or rare.]

R.T.L.

### 150—United States Armed Forces Medical Journal.

- a. SMITH, W. T. & LARSEN, E., 1953.—“Simultaneous perforated appendicitis, vivax malaria, and ascariasis.” 4 (2), 309–310.

### 151—Veterinary Medicine.

- a. COOPERRIDER, D. E., 1953.—“Recent information on hookworms of the dog.” 48 (6), 237, 256.
- b. BAILEY, W. S., 1953.—“Lesions of selected parasitic infections.” 48 (6), 238, 241.
- c. BROWN, R., 1953.—“Some common sheep diseases in Kentucky.” 48 (7), 267–268.
- d. DRUDGE, J. H., WYANT, Z. N. & ELAM, G. W., 1953.—“Continuous phenothiazine therapy for horses.” 48 (8), 306–310.
- e. ENZIE, F. D. & COLGLAZIER, M. L., 1953.—“Toluene (methylbenzene) for intestinal nematodes in dogs and cats.” 48 (8), 325–328, 341.

(151a) In the southern parts of the U.S.A. the most important hookworm in the dog is *Ancylostoma caninum*: its incidence is estimated at 86%. The distribution of *A. braziliense* is rather spotty throughout the south and south-east and is found chiefly in areas with moist sandy soil. *Uncinaria stenocephala* is absent. Sodium borate, recommended by Horlein, is effective in controlling hookworm larvae in runs with dirt floors. Injections of vitamins and of crude liver and adequate diet fortify against hookworm ravages.

R.T.L.

(151b) The lesions caused by (i) *Spirocerca lupi* in dogs, (ii) *Trichostrongylus axei* in horses, (iii) *Ostertagia ostertagi* in cattle and (iv) *Aelurostrongylus abstrusus* in cats are used to illustrate the importance of parasitic infections.

R.T.L.

(151c) From examinations of 236 sheep autopsied at the University of Kentucky, it is concluded that most of the deaths were due directly or indirectly to poor management, poor feeding and parasites. Internal parasites headed the list of diseases responsible for death (71 cases); pneumonia was second (42 cases).

R.T.L.

(151d) The long term study of low level phenothiazine administration to horses at the rate of 2 gm. daily, at the Kentucky Agricultural Experiment Station, was continued throughout a fourth year. There was no evidence of toxicity. Monthly faecal examinations for strongyle eggs gave consistently low or negative counts. At post-mortem two of the four horses had relatively large numbers of large and small strongyles, indicating the relative ineffectiveness of this form of therapy in removing the worms and in preventing the development of ingested larvae to maturity although it is effective in inhibiting egg production.

R.T.L.

(151e) Toluene in therapeutic doses of about 0.1 c.c. per lb. body-weight removed 97% of 272 ascarids from 15 dogs and 99% of 205 ascarids from 25 cats, 87% of 6,711 hookworms from 56 dogs and all of 28 hookworms from three cats, 39% of 2,720 whipworms from 42 dogs. The drug is safe and effective except against whipworm. It compares favourably with *n*-butyl chloride and is simpler in dosage and superior in range of action.

R.T.L.

**152—Veterinary Record.**

- a. BIRKETT, J. D., 1953.—“*Cysticercus bovis* in the N'dama cattle of Sierra Leone [Correspondence.]” **65** (24), 391–392.
- b. VAUGHAN, A. W., 1953.—“Report on faecal examinations in the dog.” **65** (25), 397–400.
- c. ANON., 1953.—“Garlic as an anthelmintic.” [Questions & Answers.] **65** (28), 436–437.
- d. HOSE, A. T., 1953.—“Faecal examinations in the dog.” [Correspondence.] **65** (28), 445–446.
- e. WORDEN, A. N., 1953.—“The dosing of warble-infested cattle with anthelmintic [Correspondence.]” **65** (36), 586–587.
- f. HOGARTH, T. W., 1953.—“Faecal examinations in the dog.” [Correspondence.] **65** (36), 587–588.

(152a) Commenting on Peel's article [for abstract see Helm. Abs., **22**, No. 58e], Birkett points out that although the herds of cattle in Sierra Leone originated in French Guinea, they are now permanently settled in Sierra Leone and provide at least 6,000 carcasses annually. About 3,000 trade cattle are still imported yearly from French Guinea. The Foulah cattle owners are no longer true nomads and are not heavy meat eaters. Cattle are only slaughtered on special occasions. Some other explanation is needed for the high incidence of *Cysticercus bovis* in the meat.

(152b) Examination of 150 samples of faeces from dogs in St. Kitts, British West Indies, revealed the following helminth incidence: *Ancylostoma* sp. 64%, *Toxocara canis* 8·7%, *Toxascaris leonina* 7·3%, *Trichuris vulpis* 0·7%, *Dipylidium caninum* 2%, and *Taenia* sp. 4%.

(152c) No really satisfactory evidence seems to have been produced in support of garlic as an anthelmintic for veterinary purposes, although it may be of some use for gapeworm in poultry.

(152d) Referring to an article by Vaughan [for abstract see No. 152b above], Hogarth describes a case of very heavy infection with *Trichuris vulpis* in a young spaniel which was eventually destroyed for this reason. He has found only this one case of *T. vulpis* infection during five years, with an average of 495 faecal examinations per year.

(152e) [A mixture of phenothiazine, hexachlorethane and an organic tin compound reported to have been used against warble fly in cattle with good effect.]

(152f) Hogarth cites several instances of diarrhoea in dogs in western Australia which were cured by the administration of approximately double the normal dose of tetrachlorethylene. Masses of *Trichuris vulpis* were evacuated.

**153—Virginia Medical Monthly.**

- a. FURR, J. H., WHITEHURST, W. R. & HANSEN, H. G., 1953.—“A study of intestinal parasites at Western State Hospital.” **80** (2), 108–111.

**154—Water Life and Aquaria World. London.**

- a. COLE, C. E. C., 1953.—“Eliminating *Dactylogyrus* and *Gyrodactylus*. Life cycle of dactylogyrids traced and effective treatments for both infestations.” **8** (2), 83–84.

**155—Zaadbelangen. 's-Gravenhage.**

- a. BRUINSMA, F., 1953.—“De bestrijding van stengelaaltjes (Kroef) in sjalotten.” **7** (4), 40–41.

(155a) Bruinsma describes experiments on the control of stem eelworm in shallots by warm water. He considers 43·5°C. for 2 hours to be satisfactory. He obtained a yield of 398 kg. per 100 sq. m. as compared with 92 kg. in the control.



**56—Zeitschrift für Parasitenkunde.**

- a. NEUHAUS, W., 1953.—“Über den chemischen Sinn der Miracidien von *Fasciola hepatica*.” 15 (6), 476-490.
- b. BOECKER, H., 1953.—“Die Entwicklung des Kaninchenoxyuren *Passalurus ambiguus*.” 15 (6), 491-518.

(156a) Neuhaus has carried out a series of laboratory experiments which demonstrate that *Fasciola hepatica* miracidia have a positive chemotactic reaction to *Limnaea truncatula*. Attraction occurred up to a distance of 15 cm. but the maximum distance up to which it would operate could not be accurately determined. The chemotaxis is only relatively specific since related species of snail also attracted the miracidia, though more weakly. A.E.F.

(156b) Boecker has worked out the life-history of *Passalurus ambiguus*. Eggs, in the blastula stage, are usually deposited in the rabbit's rectum and become infective (after two ecdyses within the shell) in 18 to 24 hours. Blastula eggs die within a few days outside the host but infective eggs survive at least 14 days even under unfavourable conditions. Rabbits only become infected by oral ingestion of infective ova and the third-stage larva can only hatch after passage through the stomach. Third-stage larvae undergo two more ecdyses before reaching maturity. Third and fourth-stage larvae can penetrate into the crypts and mucosa of the appendix and other parts of the large intestine, as well as the lumen. The time taken for the various stages of development within the host, from hatching to adult, varies greatly: in two animals the prepatent period was 56 and 64 days respectively. In one case the life span of the parasite, from the beginning to the end of infection was 106 days. A.E.F.

**157—Zeitschrift für Wissenschaftliche Mikroskopie und für Mikroskopische Technik.**

- a. DUHM, B. & GÖNNERT, R., 1953.—“Über eine Methode zum Vergleich desselben Objektes im Licht- und Elektronenmikroskop.” 61 (5), 259-269.

**158—Zentralblatt für Bakteriologie. Abteilung 1. Originale.**

- a. KREIS, H. A., 1953.—“Beiträge zur Kenntnis parasitischer Nematoden. XV. Eine neue Cyathostoma-Art—*Cyathostoma sarcidiornis* n.sp.—aus der Trachea der Höckergans—*Sarcidiornis melanota*.” 159 (5), 371-377.
- b. MÜLLER, G., 1953.—“Untersuchungen über die Lebensdauer von Askarideneiern in Gartenerde.” 159 (5), 377-379.

(158a) Kreis describes in detail and with many figures both the male and female of *Cyathostoma sarcidiornis* n.sp. from the trachea of a specimen of *Sarcidiornis melanota* which had died in the Berne Zoo. The measurements of the new species are compared in a table with those of three other *Cyathostoma* spp. The principal distinguishing features of *C. sarcidiornis* are: a longer oesophagus, a larger buccal capsule, fewer cephalic papillae (four, as compared with six in other species of the genus), and the structure of the spicules. A.E.F.

(158b) Müller describes an experiment carried out in an attempt to determine the survival time of infective *Ascaris* ova in garden soil. In 1946 an 8 sq. metre plot of sandy soil was given an application of 159 litres of sewage from a household of 19 persons (one of whom was known to be heavily infected with *Ascaris*) and which was estimated to contain about 2,000 *Ascaris* ova per litre. The plot was then sealed off and strawberry plants were grown on it and harvested each year from 1947 to 1952. Two volunteers (one of whom was the author) each ate 30 unwashed strawberries, with adherent sand from each year's crop. In 1947, 1948, 1950 and 1951 both became infected and passed *Ascaris* worms after treatment: in 1949 and 1952 only one was infected. Each year a 10 gm. sand sample was examined for ova with the following results: 1946, 50 ova; 1947, 20; 1948, 10; 1949, 5; 1950, 1951 and



1952, 3 ova each year. Larvae were hatched each year from the ova recovered. The interval of infection in the volunteers corresponded roughly with the soil egg count. Müller concludes that *Ascaris* ova can remain infective in soil for at least five to seven years.

### 159—Zoologischer Anzeiger.

- a. WIESER, W., 1953.—“Der Sexualdimorphismus der Enchelidiidae (freilebende nematode Nematoden) als taxonomisches Problem.” 150 (7/8), 152–170.

(159a) Wieser discusses the sexual dimorphism which exists in certain marine nematodes of the family Enchelidiidae and which has led to confusion in nomenclature since different forms of the same species have been ascribed to different genera. The species showing sexual dimorphism all belong to the subfamily Enchelidiinae and are placed in the genera *Symphysostoma*, *Calyptronema* and *Polygastrophora*. Wieser gives a complete list of valid species in these three genera, with synonyms.

## NON-PERIODICAL LITERATURE

- 160—BLACKLOCK, D. B. & SOUTHWELL, T., 1953.—“A guide to human parasitology for medical practitioners.” London: H. K. Lewis & Co. Ltd., 5th edit. (revised by T. H. Davies). viii + 228 pp., 25/-.

### 161—INTERNATIONAL VETERINARY CONGRESS (15th), Stockholm, August 9–17, 1953.

- a. ABDUSSALAM, M. & SARWAR, M. M., 1953.—“Schistosomiasis in Pakistan.” Proceedings, Part I. Vol. I, pp. 18–23. [French & German summaries p. 23.]  
 b. BURG, W. B. v.d., BAUDET, E. A. R. F. & VERWEY, J. H. P., 1953.—“Lethal bleeding in the cranial cavity of deer (*Cervus elaphus*) caused by a nematode, belonging to the family of the Metastrongylidae.” Proceedings, Part I. Vol. I, pp. 414–417. [French & German summaries p. 417.]  
 c. STEWART, D. F., 1953.—“Resistance to nematode infestation in sheep.” Proceedings, Part I. Vol. I, pp. 417–421. [French & German summaries pp. 420–421.]  
 d. WETZEL, R., 1953.—“Zur planmässigen Bekämpfung der parasitischen Würmer.” Proceedings, Part I. Vol. I, pp. 421–424. [English & French summaries p. 424.]  
 e. SKRYABIN, K. I., 1953.—“L'helminthologie en Union Soviétique.” Proceedings, Part I. Vol. I, pp. 425–432. [English & German summaries pp. 431–432.]  
 f. CAMERON, T. W. M., 1953.—“Factors determining the geographical distribution of parasites.” Proceedings, Part I. Vol. I, pp. 455–458. [French & German summaries p. 458.]  
 g. FOSTER, A. O., 1953.—“Critical review of present-day treatments of parasitic infections giving lists of drugs.” Proceedings, Part I. Vol. I, pp. 458–468. [French & German summaries p. 468.]

(161a) Mammalian schistosomiasis is considered to be one of the major animal health hazards in Indo-Pakistan. Five schistosome species are reported from West Pakistan in this paper. *Schistosoma indicum* is the principal schistosome in equines, cattle, sheep, goats and camels; it is rarely found in buffaloes there. *S. spindalis* was present in about one third of the buffaloes and in four out of 121 cattle slaughtered at Lahore but there were no appreciable lesions. *S. nasalis*, hitherto known only in peninsular and eastern India and in East Pakistan, has been found recently by the authors in buffaloes in the Punjab. *Ornithobilharzia turkestanicum*, previously reported by the authors in a sheep at Murree in the western Himalayas, 6,500 ft. above sea level, was not found in a large number of sheep, goat, cattle or buffalo.



carcasses in the Punjab. It is noted that Montgomery's description of the adult of *O. bomfordi* does not differ from that of various workers for *O. turkestanicum*, save in the slightly smaller number of testes. As the testes vary in number in *O. turkestanicum*, this worm is regarded as a synonym of *O. bomfordi*. Specimens of *Pseudobilharziella* sp. were collected from *Anas platyrhynchos* and *Nettion crecca* shot near Lahore. The livers were darker than usual and there were petechiae in the caecal mucosa which contained spindle-shaped eggs, 0.175 mm. to 0.25 mm. in length, one end of which bore a spine curved like a hook. R.T.L.

(161b) A large subdural blood clot was found post mortem in a *Cervus elaphus*, five months old, which had shown parietic symptoms. In the coagulum and embedded in the brain and chorioid plexus there were a number of nematodes, 3 cm. to 3.5 cm. long, which are placed in the genus *Elaphostrongylus*. Specimens were also found in another deer, four years of age. Dikmans, having examined the material, contributes the opinion that the worms resemble *E. cervi* and differ from *E. odocoilei* in the structure and appearance of the gubernaculum and in the length of the spicules; they may be a new species. R.T.L.

(161c) The resistance of sheep to nematode parasites is based on various mechanisms. Sheep quickly acquire an immunity to infection with *Trichostrongylus colubriformis* which cannot be solely ascribed to an increase in age, an early infection increasing the resistance to later infections. Diet does not greatly influence resistance. Acquired immunity is correlated with the antibody response. Resistance to *Haemonchus contortus* is shown to be irregular and there is no proof that immunity can be acquired. Sheep may resist a number of dosings with *H. contortus* larvae and may then succumb to the next. Neither the intensity nor the duration of the antibody response is indicative of the resistance of the host to reinfection. The phenomenon of "self cure" is due to an allergic reaction caused by the absorption of infective larvae by sheep already sensitized by previous infections. The reaction, which seems to be local rather than systemic, is characterized by an increase in the rate of circulating antibodies and an increase in the blood histamine. R.T.L.

(161d) Wetzel outlines the general principles of control of worm parasites and expresses the opinion that an organized campaign on a large scale could be planned with the support of breeder organizations, farmers' associations and the co-operation of other lay bodies. As examples of the benefit to be derived, the control of liver-fluke and of strongyles in horse are quoted. R.T.L.

(161e) In this brief survey, Skryabin outlines the organization of helminthology in the U.S.S.R., the principles and control measures applicable against helminthiases and the chief contributions made by Soviet helminthology in the scientific and practical fields. He foresees a transformation of nature which would leave no biological possibility of helminth existence. The Soviet theory of extermination points out the road to a future "ahelminthotic epoch" of civilization. R.T.L.

(161f) Many of the factors upon which the distribution of the animal parasites of domestic animals are dependent are still unknown. Chief among these are those which affect the parasites during their free-living stages and those affecting their definitive hosts. The importance to the larval stages of the micro-environment is discussed. Attention is drawn to Gordon's bioclimatograph by which it is possible to forecast not only whether a parasite can exist in any area, but also if it can flourish and therefore cause disease. R.T.L.

(161g) Foster has tabulated the antiparasitic chemicals and drugs which have so far been found satisfactory in combatting the various specific forms of parasitism including helminths in the domesticated animals. R.T.L.

- 162—MOZLEY, A., 1953.—“A background for the prevention of Bilharzia.” London: H. K. Lewis & Co. Ltd., viii + 71 pp., 9/-.

Mozley supplies the scientific data necessary for an understanding of the efficient application of methods for the prevention of schistosome infections. In successive chapters succinct and illustrated accounts are given of the various schistosome worms which infect man, the vectors, habitats and animal and vegetable associates. In a final chapter dealing with future developments, Mozley expresses the opinion that although molluscicides will always be needed as an emergency method some of the efforts now being directed to a search for new molluscicides might profitably be directed to placing on a practical footing purely oecological methods of preventing the development of dangerous conditions.

R.T.